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ORIGINAL ARTICLES.

PISTOL-SHOT WOUND OF THE ABDOMEN,

INVOLVING THE LIVER, STOMACH, SUPERIOR MESENTERIC ARTERY AND VEIN, SMALL INTESTINE, AND KIDNEY: LAPAROTOMY; NEPHRECTOMY; DEATH ON THE FIFTEENTH DAY; AUTOPSY.[1]

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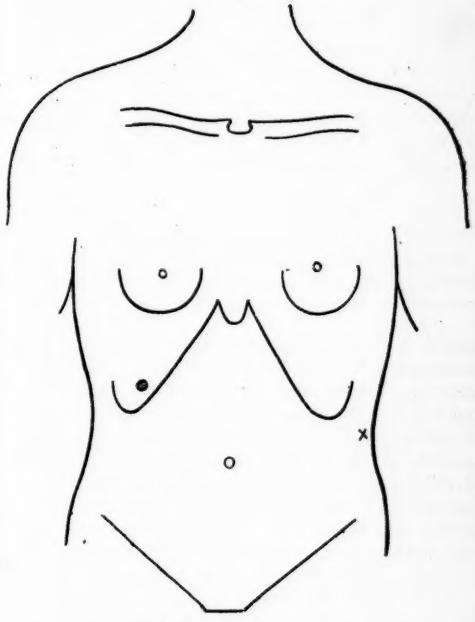
MISS B., in Vineland, N. J., a plump and healthy, well-developed girl of nearly eighteen, shot herself with a pistol, calibre No. 32, at 6.30 A.M., April 1, 1887. In a few minutes she was found by the family who had been roused by the shot, lying on the floor of the room next her bedroom, bleeding slightly, and conscious, and was carried to her bed. Dr. O. H. Adams who arrived in a few minutes found that the ball had entered over the liver, and after a careful search found it lying under the skin of the left flank. She was pale and weak and suffering considerable pain. Giving her one quarter of a grain of morphia subcutaneously and directing that no food be given her, he telegraphed for me. I reached there at 2 P.M.

She was perfectly conscious, very pallid and weak, suffering moderately. Her night dress was blackened and burned over a space four to five inches in diameter. She told me that the wound was self-inflicted, hence the pistol had been almost in contact with the body, and the ball had probably passed in a straight line. The small, blackened wound of entrance was seen over the ninth rib, which was fractured, four and a half inches above the level of the navel, and three and three-quarter inches to the right of the median line. Skin not burned. The ball was located eight inches to the left of the median line one and a half inches above the level of the navel. There was moderate tenderness over the entire belly, hepatic dulness not changed, stomach resonant from fifth interspace, no cough, no râles, vocal fremitus normal, renal dulness began at tenth rib on left side, and was the same on the two sides. There was severe pain in the left shoulder. She had vomited a drachm and a half of clear, bright blood, she told me, immediately after the accident. This had been lost, but I saw what she had twice vomited later. It was ordinary mucous and bilious vomiting, streaked with a few drops of blood. About a pint of urine, the first since the accident, was drawn by the catheter. It was not bloody. Pulse 104, respiration 30. No material rise of temperature. As after consultation with Drs. Adams and Bidwell it was deemed almost certain that the belly was invaded by the ball, exploratory laparotomy was advised, consented to and begun at 3 P.M., and terminated at 6 P.M.

FIG. 1.



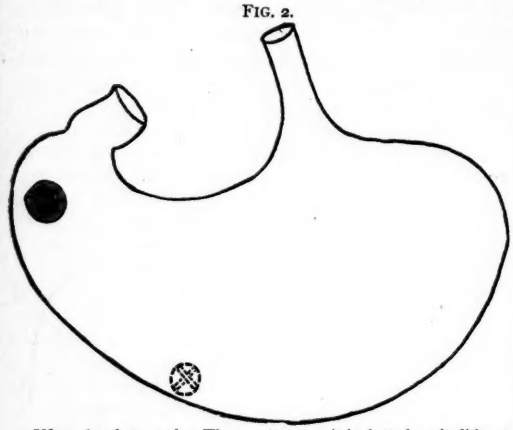
● Wound of entrance.
x Point of lodgement of ball.

Operation.—The instruments were in 5 per cent. solution carbolic acid, the sponges had been lying in a similar solution for five days; hands and nails were cleaned by soap and water and corrosive sublimate 1:1000; the wall of the abdomen was thoroughly washed with the sublimate solution, especially at the wound of entrance and the navel, an easy hiding-place for dirt and mischief. Plenty of towels in a warm sublimate solution were provided. The sponges were placed in the sublimate solution during the operation. Ether given by Dr. Beck. The ball was easily removed just under the skin. Neither wound could be traced positively into the belly. An incision was then made in the median line from the epigastrium downward three inches long, subsequently prolonged to eight inches, and in such a position that it crossed a line joining the two wounds, so that, if the ball had passed in the belly wall only, its track would be found. On opening the belly neither blood nor serum escaped, nor was any extravasated food or feces noticed. There was no peritonitis. Two fingers

[1] Read at the American Surgical Association, Washington, D. C., May 12, 1887.

were passed in and an effort made to discover the wound of entrance or exit without any being revealed by touch. The wound was then enlarged and the stomach drawn out. A small round wound near the pylorus was found and was closed by four sutures (Lembert) of the finest iron-dyed silk a

FIG. 2.



Wounds of stomach. The wound of exit is dotted, as it did not show in this view of the stomach, being on the inferior and posterior surface.

round ordinary sewing needle being used, only the peritoneum and muscular coat being caught by the sutures. This wound was practically closed by the pouting mucous membrane. As the ball had entered the stomach, search was made for the necessary wound of exit. None was to be found, but the manipulation showed that a small amount of bloody serum existed in the belly, and a large area of extravasation was seen in the mesentery. The cause for this bleeding was then sought. The bowels were carefully drawn out and placed on the belly wall wrapped in towels kept wet with the warm sublimate solution. The blood extended fan shaped in a moderately thick layer between the two layers of the mesentery, its periphery extending almost two feet along the bowel and its point being at the mesenteric attachment to the spine just below the head of the pancreas and in the line of the wound. But little blood had escaped into the peritoneal cavity. The mesentery was carefully torn through and a small artery tied. The chief bleeding came from a hole nearly one-eighth inch in diameter in a large vein, so large and lax that at first I thought it the vena cava, but its position just below the head of the pancreas convinced me that it was the large superior mesenteric vein just before it forms the portal vein. After much difficulty I seized it with hemostatic forceps and placed a lateral ligature of chromicized catgut on it.

Meantime the manipulation had revealed a moderate bleeding point in the omentum near the wound of entrance. This was tied with catgut, and the ligatured part cut off. The anterior border of the liver had been scalloped by the ball, but as there was no bleeding it was let alone. In addition, a large wound in a coil of small intestine in the left flank had been found. This was one and a quarter inches by half an inch, the long axis in the axis of the bowel, almost at the mesenteric attachment, its edges ragged, the mucous membrane pouting into the wound, but not closing it, the peritoneal wound extending beyond that in the muscular coat. No bleeding was going on. The bowel and mesentery here were carefully examined on both sides, and upward and downward, to find any other wound, but neither did the bowel nor the mesentery show the slightest lesion. A little bilious matter escaped during the closure. This was quickly caught on a

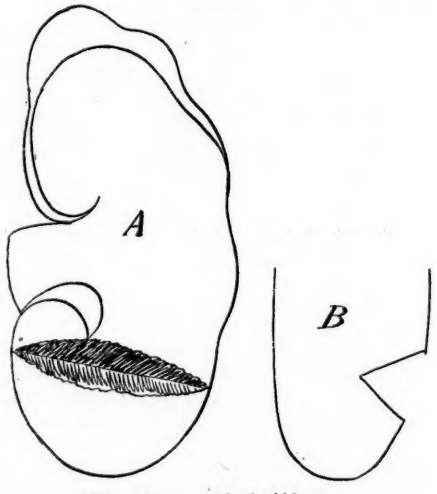
FIG. 3.

Perforating wound of the small intestine 1¼ x ½ inch laceration of peritoneum beyond the wound, pouting of the mucous membrane.

sponge and the bowel carefully cleansed. Ten Lembert sutures were used in closing it.

Returning now to the stomach, a very careful search was again made for the wound of exit. Two small patches apparently of extravasation had been seen before, in the lower border, about four inches from the pylorus, and it was now found that one of these, instead of being an extravasation, was the

FIG. 4.



A Shows the wound in the kidney.
B Shows its depth.

small, round wound of exit, obscured by a slight coating of blood. This was closed by three black silk Lembert sutures, as in the case of the other wound.

Thus far, one lesion after another had been attended to as found, and in the order of urgency. A systematic investigation was now made of the entire bowel, from the stomach to the sigmoid flexure, and no other wound discovered. Each coil as it was drawn out was examined first on one side and then on the other. The wound of exit from the peritoneal cavity next received attention, while the bowels were lying on the belly wall. It could now be found after a moderately easy search. I passed my finger in, and discovered that the left kidney was badly lacerated, and I immediately removed it, peeling it out of its capsule, and tying the pedicle with a stout silk ligature. No difficulty attended this step. On removal, the kidney was found to be ploughed through by the ball, on its anterior surface, from the hilum to the opposite border half way through its entire thickness one-third of its length above the lower end. Very little blood, and, so far as I could determine, no urine, was found at the site of the kidney. A rubber drainage tube was inserted through the wound of exit into the abdominal cavity.

Her condition by this time was such that no time was to be lost in completing the operation. The abdomen was therefore washed out by a hot sublimate solution (110° to 115°) till the water flowed out clear; the amount of blood so washed out being but little, some of which had passed into Douglas's cul de-sac. The bowels were replaced, the omentum carefully spread out over them, and the abdomen closed. This was done by nine deep silver-wire stitches, including the peritoneum, and eight intervening ones of silk. I should have sutured the peritoneum at the site of the removed kidney, and also have sutured it in front independently of the rest of the abdominal wall, but that the condition of the patient was such as to forbid the necessary delay. As a matter of fact, no added risk was caused. The wound of entrance was then cleansed, and closed by three stitches, and the wound of exit was closed by two stitches, except where the drainage tube passed out. Am Ende's sublimate gauze, rubber dam, and a wide flannel bandage completed the dressing, and she was then placed in bed with hot bottles and blankets. Pulse 175, and very weak. Some hypodermatic injections of whiskey had been given with advantage during the operation.

During the night a little cracked ice and some ice water and half a grain of morphia were given. She had had considerable pain, but had slept about three hours. At 9.30 P.M. ℥iij clear urine had been drawn, but from then till 7 A.M. only ℥ss was secreted. The morning temperature was only 99.4°; pulse 146, and respiration 18. At the request of her mother, who had mean time arrived from New York, I asked my friend, Dr. Weir, of New York, to see her. He arrived the next day and coincided in the wisdom of the course taken, especially as to the kidney.

Drs. Adams and Bidwell took charge of the case until I able to see her again with them on April 5. From their daily reports I condense her history as follows:

During the day following the operation suppression of urine was threatened, only ℥iijss being secreted. This was quite albuminous. The next day, however, the amount rose to ℥xxiv and on the third day to ℥xl, and the albumen gradually disappeared. Her temperature fluctuated between 100° and 101°, rising once to 102.5°, when a sponge bath and for a short time an ice bag to the abdomen brought it down to 101°. For the first three days, as she was so fat and hearty, nothing was given her except a little cracked ice, ice water, and a little whiskey and champagne. On the fourth day peptonized milk in frequent but small quantities was allowed with rectal enemata of the same every four to six hours, and later of "liquid peptonoids," "beef peptonoids," and "bovinine." The rectal alimentation was prevented earlier by reason of a number of watery, but not bloody stools. She had also vomited several times, once on April 4th quite violently. The matter vomited was bilious with no blood in it. She had been in a great deal of pain which was fairly controlled by morphia. For a short time on the fourth also she was delirious. Menstruation appeared regularly when due on April 3d, and ran its usual course of four days.

At my visit on the 5th of April I found her, on the whole, doing well. Her temperature had that morning fallen to the normal, pulse 114, respiration 16, but I did not like her anxious expression and continuous pain and sleeplessness. She was thirsty, but not hungry. On changing the dressings I found the wound of entrance healed. From the wound of exit, which Dr. Adams had dressed on the the 4th, there was scarcely any discharge. It was healed except for the drainage tube. The abdominal wound was firmly healed at the upper and lower ends. The third, fourth, and fifth deep wire stitches had broken, presumably when the violent vomiting took place the day before or possibly earlier. The intervening silk stitches prevented much gaping. Where the gaping took place the omentum was somewhat exposed, but as it and the belly walls were well glued together, I did not disturb them save to introduce one stitch of support at the widest gap, but I did not approximate the edges, as there was a drop or two of discharge from small aseptic stitch abscesses, and I feared lest I might force it into the abdominal cavity.

At my next visit, April 7th, I found the wounds doing well, no further gaping. Six stitches at the two ends were removed, as also the drainage tube, from which there had been no discharge. The pain in the left shoulder and at the epigastrium continued to a moderate extent. There was no peritonitis or tympany. But her temperature had risen to 101.3° and the pulse to 124.

On the 8th, at noon, she had a chill lasting twelve minutes. The temperature rose to 104°, the pulse to 148, and the respiration to 32; the temperature, however, falling to 99° by 6 P.M. Her stomach and bowels had also became irritable, and much of her nourishment was lost. I did not receive the telegram calling me there till after the last train had left, so that I did not see her till the 9th. She had had another chill that morning, and her condition was most critical; temperature 104°, pulse 160, and very weak, respiration 36 and shallow. I suspected, of course, pus at some point and debated reopening the

belly, but as the most careful examination revealed no spot of special tenderness, no dulness, no fluctuation, and she was almost, it seemed, *in articulo mortis*, I did not deem it prudent to do so, lest she should die at once.

The next day, the 10th, she improved somewhat, her temperature falling to from 99° to 101.5°. She had a natural movement from the bowels with neither blood nor pus. She still vomited considerably.

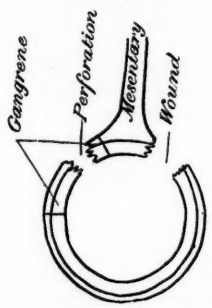
April 11. Dr. Weir saw her with me. Her temp. was 100.6°; pulse 120; resp. 24. The most careful examination showed nothing locally that would guide us in reopening the belly, either in front or flank, especially in her then bettering condition. There was no pain except on very deep pressure, which produced diffused pain; nothing in Douglas's cul-de-sac; uterus movable, not tender; no peritonitis anywhere; only the stitch wounds were tender with slight suppuration about them, and on the surface of the exposed omentum. We thought it not impossible that the chills, etc., arose from those stitch wounds, and almost hoped she would still pull through. The wound was washed and redressed as before, rubber adhesive plaster supporting the belly wall outside the dressing.

13th. I saw her again. She had had another chill, with a temperature of 105.4°, and had vomited several times, and also had some involuntary evacuations. But as her condition was fair, pulse 136, temp. 101.4°, I decided to reopen the belly and explore it. No dulness, hardness, tenderness, or œdema existed to determine any opinion as to suppuration, but I feared a possible mesenteric abscess. No ether was given, and very little pain was felt. The adhesions between the omentum and the belly-wall were broken up with very moderate force, and two fingers passed into the belly. The intestines were bright and glistening, and no peritonitis existed anywhere. Surgical bimanual examination revealed no pus or special tenderness at the site of the removed kidney, or so far as it could be located at the intestinal wound. The stomach and liver were in good condition. The fingers detected a general hard mass at the site of the wounded superior mesenteric artery and vein, but there was no fluctuation, and when withdrawn the fingers showed no pus; nor did a sponge passed into the same point show any. The wound was then reclosed by sutures, care being taken to replace the omentum and belly-walls in as nearly their former position as possible, and a glass drain inserted as a precaution. No shock followed. Her temperature fell temporarily during the evening, though it rose again during the night, and she slept nearly three hours.

During the next day (April 14) she had two bloody movements; she began to have involuntary discharges of urine as well as feces, and though her temperature never rose beyond 102.2°, she gradually failed, and died April 15th, at 1.30 P. M.

The autopsy was made by the Coroner's direction, by Dr. H. C. Smith, of Millville, twenty-one hours after death. Through his courtesy, as well as from Drs. Adams and Bidwell (for I was unable to be present), I obtained the following facts, as well as the stomach, bowel, and right kidney. There was general peritonitis, except in the pelvis, but no free pus was found anywhere. The wound in the liver was healed. Only one wound was found in the stomach near the pylorus, and this was healed, the four stitches being seen in place. The site of the other could not be found, nor could its three stitches be found anywhere. Search was made in the duodenum also, but no wound could be discovered. The duodenum, head of the pancreas, and mesentery were softened and matted together by inflammatory exudate, and the head of the pancreas was cheesy. The blood in the mesentery was disintegrating and suppurating, though no abscess existed nor was there any free pus in the peritoneal cavity. The suppuration was chiefly marked along

FIG. 5.



Section of wound in small intestine at *a* in Fig. 3, showing the site of the gangrenous spot and perforations found at the post-mortem. The wound is represented open, as at the operation.

the mesenteric attachment of the intestine. The wound in the small intestine was found entirely healed, the stitches being in place and covered with a thin layer of lymph. On the other side of the mesentery, corresponding in position to the lower end of this wound, was a spot in the bowel-wall as large as a five cent coin, which was gangrenous, and in its centre was a double perforation of bowel with pus in the calibre of the bowel. I have not received the mesentery, but I am told that it also showed local gangrene at this place. Very careful and systematic search of the entire length of the bowel revealed no wound except that discovered at the operation. No trouble was found at the site of the removed kidney. The right kidney was removed and found healthy and enlarged. Both kidneys having been in the same bottle in alcohol, the right for two weeks the left for four, their measurements are: right, 4¼ by 2⅜ inches; left, 3½ by 1⅝ inches; the right kidney is also thicker. The spleen was normal; right ovary cystic. Only the abdomen was examined.

REMARKS.—The question of doing a laparotomy was not wholly easy to decide. Besides social circumstances, which made me hesitate to assume any except urgent responsibility, neither wound could be positively traced into the belly cavity, though the nearness of the pistol made it almost certain that the ball had pursued a straight line, and if so, had penetrated the abdomen. It is worthy of note, in this connection, that when the fingers were in the abdom-

inal cavity the wound of entrance could not be felt, and later, when, by lifting the belly wall, the perforation in the peritoneum could be *seen*, when the finger was placed there it still could not be *felt*. The amount of clear blood vomited at the time of the accident was very small, and we had only the statement of the wounded girl to depend upon. Even this, as well as the streaking of blood in the later vomited matters, could come from contusion or her fall. There was no evidence of blood either by the bowel or the bladder. Her long continued and deep pallor, weak and rapid pulse pointed toward hemorrhage, but palpation and percussion did not give positive evidence of any. But, as everything seemed to point toward the *probability* of the belly's being penetrated, I determined upon an exploratory laparotomy, in order to determine the facts absolutely. In this decision my colleagues coincided. Fortunately, the presumed course of the ball crossed the proper line of incision, and I was able to decide that it had not traversed the wall of the belly by not finding its path while I was making my first incision, and before opening the peritoneum.

No food having been taken before the early hour in the morning at which the shooting occurred, fortunately prevented any extravasation of food, and none of the wounds being in the lower bowel, no feces escaped. Although it was nearly ten hours from the accident to the time when the intestine and stomach were sutured, it is worthy of notice that no intestinal or gastric juice or fluid contents escaped, even though the intestinal wound was so large and gaping, and vomiting occurred three times prior to the laparotomy. The pouting mucous membrane well occluded the gastric wounds.

The second opening in the stomach was difficult to find, and was at first mistaken for a simple extravasation, a fact already noted by Dr. Briddon[1] as occurring in a case of his own. There was, however, no doubt as to its existence, and I put three sutures in its edges. At the post mortem no evidence of its position could be found, though careful search was made both in the stomach and the duodenum, the possibility that I might have measured the wrong way being borne in mind. There is neither scar nor sutures to be found on the outer or inner surface of the stomach. The sutures in the other stomach wound are in place, and look as though they would remain for some time. Whether, in the other wound, the sutures disappeared internally after the healing of the small wound, or loosened and were lost in the belly cavity cannot be determined.

The peritonitis, found at the autopsy, did not exist on the twelfth day, when the belly was re-explored. Nowhere was the glistening peritoneum then dulled. Two sources existed for the later peritonitis—the opening in the intestinal wall opposite the intestinal wound and the mesenteric pus. The former was the most likely source. At the operation the bowel and mesentery were carefully inspected on both sides, but no such opening existed. Had it been made by the ball, peritonitis would undoubtedly have occurred quickly after the operation, and there would not have been *two* openings here, as the specimen shows. I have no doubt that the fact was that the ball contused a part of the mesentery, especially probably an arterial branch. This did not show at the time, but later on produced a limited gangrene, and perforation took place a day or two before death. Dr. Smith, also, tells me that the mesentery itself was necrosed at this place. The bloody stools preceding death point in the same direction, especially as she had had a natural movement of the bowels, with neither blood nor pus, on the ninth day after the wounding. Hereafter, however, in all cases of intestinal gunshot wound, whether single or double, I shall examine the mesentery more minutely for any possible evidence of contusion as well as perforation.

Possibly this necrotic process in the bowel, as well as the general softening of the duodenum, was promoted by the serious wound of the superior mesenteric vessels, especially the vein. The artery was a small branch, but the vein was the main trunk just below the head of the pancreas, and so large that when I first seized the bleeding point and lifted the wall I thought it the vena cava. I placed a lateral ligature upon it, seizing the margin of the small opening, as large as the lead of a pencil, and securing it by a catgut ligature. To dissect it loose and encircle it with the ligature would have required a considerable loss of time which I wished to avoid, and besides, I feared the effect on the bowel of obstructing so large a vein. Whether a thrombus formed in the vessel, and occluded it, was not examined. The blood, curiously enough, did not find vent into the peritoneal cavity by the wounds in the mesentery, save to a very slight extent, but dissected the two layers of the mesentery, and was spread out, fan-like, from its source to two feet of bowel, in a moderately thick layer, thickest at the spine. This it was impossible to remove, and I had to trust to its absorption. I was not surprised that there was trouble at the site of the wound in view of the injury done by the ball, and the necessary manipulation to get at and secure the vessels. It is worthy of note, however, that the chief trouble existed at the periphery of the clot near the bowel, where we would expect absorption most readily to take place. Probably the main absorbent trunks from this part, as they approached the spine, may have been obstructed by pressure, or have been injured by the ball or during the operation.

The kidney, I believe, has never before been removed at a laparotomy for gunshot wound, but it was clearly the right thing to do. Bloody urine is one of the most frequent signs in injuries of the kidney, and its absence here was remarkable. The wound extended entirely across the kidney, and half way through its thickness, yet the urine (℥xvj) drawn eight hours after the accident (and none had been passed), was absolutely free from blood, the injury apparently arresting the function of this kidney, while the laceration of the renal substance was such that but slight bleeding occurred. Possibly the urine drawn had been mostly secreted during the night. The day following the operation the remaining kidney worked badly, only three and a half

[1] THE MEDICAL NEWS, January 8, 1887.

ounces of albuminous urine being secreted. But the next two days dispelled all anxiety on this score, the urine rising to twenty-four and forty ounces respetively, and the albumen soon disappeared. The early and marked compensatory enlargement of the right kidney is also of great interest and importance, though, of course, now well known to follow nephrectomy.

When the chills occurred, due, no doubt, to the necrosis and suppuration of the large mesenteric blood clot, naturally the first impulse would be to open the belly, anteriorly or in the flank, and search for the pus. But I was deterred from this course by her general condition, which then threatened almost immediate dissolution, and by the fact that no peritonitis existed at the spots most likely to be the seats of suppuration. The most careful external examination revealed its absence. To this, possibly, the wounded vessels and effused blood should be an exception. Even here, however, there was no dulness, fluctuation, or hardness, and the slight tenderness that existed was to be expected. When I did reopen the belly and examine this spot I only found a general matting of the tissues, and no accumulation of pus in an abscess. What pus did exist at the post-mortem was not free in the belly, nor accumulated in an abscess, but diffused between the mesenteric layers.

I did not suture the peritoneum at the site of the removed kidney, as the patient's condition did not allow of the delay, and no harm came of it. In view of the possibility of the giving way of stitches in the abdominal wound, which occurred here, and also in a case of Dr. Bull's (and exposed the intestines), I should hereafter take time to close the peritoneum by a continuous catgut suture before suturing the abdominal wall, even if the patient's condition were bad. The avoidance of possible subsequent dangers would justify taking a certain amount of present risk.

The reason for the severe and quite persistent pain in the left shoulder, I could not determine.

THE POLAR METHOD OF ELECTROTHERAPY IN GYNECOLOGY.[1]

APPLICATION, DOSAGE, AND MEDICATION.

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IN this paper I shall treat of those points which are of more general interest and of practical importance in gynecological practice.

I. *Essentials for the successful use of electricity.*

II. *Manner of application, electrode, and instruments to be used.*

III. *Measurement and dosage.*

IV. *The method of applying medicinal agents, or electro-medication.*

The use of electricity is rapidly gaining in favor among gynecologists, and this is due to the *galvanometer*, mainly, hardly less to the introduction of the *polar method—i. e.*, the direct application to the tissues, and to the use of *strong, effective currents*—making it possible to apply the current without those long sittings of twenty and thirty minutes, which made it an impossibility for the busy practitioner heretofore. These are the essential features of the gynecological electrotherapy of to-day, in which the *electricity* which I advocate differs from the medical electricity which has so long remained in a very dubious light before the profession.

This questionable medium has at once become a valuable agent; a very perceptible change is taking place in the profession; the very men who, not a year ago, denied the possibility of measurement and dosage, now appear as converts: the admirers of mild currents and half-hour sittings continued for months, are hushed by the undeniable logic of facts, by the astonishing results achieved by effective currents in a few short sittings; in short, medical electricity is now emerging from the primitive condition in which it has too long remained.

Whilst commerce and industry have developed the most wonderful properties in this agent, and have utilized it to a marvellous degree, the medical profession has almost ignored it, though known for an entire century, since the time when Galvani, at sunset, on a September evening, one hundred years ago, while endeavoring to suspend the legs of a skinned frog, by a copper hook through the spinal column, to the iron railing of his garden terrace, observed the twitching of the muscles when the copper hook touched the iron railing. This event marks the first progressive step in the history of electricity since the discovery of the remarkable property of amber, 600 years B.C.

Fertile brains soon developed the discovery of the Bolognese savant, which found favor especially among the French.

The most important advance in the use of galvanism as a medicinal agent is, however, due to the labors of Remak, of Berlin, forty years ago, which we must accept as the basis of our work; upon this we build.

Physiologists have developed the science, and neurologists have applied it, but the profession at large has gained but little; indeed, we may say that the teachings of Remak have not been utilized as they should have been. Gynecologists were not successful, because they merely followed the specialists, the neurologists, who had adapted the new remedy to their own particular purposes, in a very different sphere; isolated, and even wonderful successes were reported, and created a temporary interest, which soon subsided. Even the success of Cutter, of New York, in the destruction of fibroid tumors, seventeen years ago, remarkable as it was, did not arouse emulation. The excellent results of Bruns, of Tübingen, in the treatment of goitre, and of nasal polypi, were noted by only a few and forgotten by them; the brilliant application of the electrolytic properties of galvanism for the destruction of supernumerary hair in the eyelid, made by our friend Dr. Michel, of St. Louis, would have met with a similar fate had it not been made so valuable to dermatologists by our col-

[1] Read before the St. Louis Medico-Chirurgical Society.

league Dr. Hardaway, so that among a limited number of specialists this one property of galvanism was thoroughly appreciated; but to the profession at large the electric current still remained the same mysterious agent, regarded with indifference, with distrust, or with awe, until Apostoli, in 1883, gave us the key to the successful application of electricity for the destruction of fibroid tumors by urging, 1. Localization, the limitation of effect to one active pole, which must be placed within the tissues; and, 2. The use of currents stronger than any hitherto applied in medical practice. Upon these fundamental laws I have based the theory and practice of gynecological electrotherapy.

Little can be said of electricity in gynecology; it has had no influence whatsoever upon the development of this rapidly progressing specialty; reference to even the latest and most thorough text-books affords the best proof of this fact.

The gynecologist, unacquainted with the varying properties of the electric current, resorted to this remedy only when all other means had failed; in the most difficult and unyielding cases he tried an agent with which he was not familiar; he naturally failed, and as naturally ascribed his failure to the remedy he used.

Need we wonder that no attempt was made to apply electricity in gynecological practice, when Sir James Y. Simpson stated that "Electrization of the uterus was all but useless, and that when uterine action had been apparently excited by galvanism it was *a mere coincidence*, or resulted from an impression made on the mind of the patient, or on the abdominal parietes by the electrode." Very little more advanced in his practice is Powell, a writer on medical electricity twenty years ago, who ridicules Simpson for this statement in his *Practice of Medical Electricity*, published in Dublin in 1869; though he tells us that the utmost care should be taken in recording cases, etc., he himself gives the following case histories: "Galvanism and faradism were applied for three weeks, and with marked benefit;" or, "he was put under a course of galvanism, and in five weeks the power of the arm began to return."

This was a time when, in the famous Guy's Hospital, patients were treated by shocks from Leyden jars passed through the pelvic regions from the sacrum to the pubis, giving the very acme of what we most cautiously avoid in its mildest form—*i. e.*, shock.

But we can go down to the very latest literature without an improvement in that vagueness which has killed electricity as a medicinal agent. What is the practice of those who in their writings urge precision in application and measurement? What is the practice of those who preach exactness, and tell us that the want of progress is due to want of precision? By their own case records we see that they themselves commit precisely the same error.

We are in a stage of transformation, light is beginning to dawn, the importance of precision in application, dose, and record, is beginning to be appreciated, but not as yet fully understood or practised; so we see one writer telling us that Apostoli applied *one and a half and two and a half ampères;* another says that whilst he formerly used only twenty-five milliampères, he now has applied as high as *ten ampères*[1] (*ten thousand milliampères!*); another is recording the strength of faradic currents in milliampères.

The state of gynecological electrotherapy is not yet clear; hence, I believe that a practical exposé is in place, and conditions are now favorable to progress since gynecologists are beginning to develop the science. Hitherto nothing has been achieved for the reason that the gynecologist has followed the neurologist, and has endeavored to follow the practice of the latter in his specialty; this led to injurious or to negative results, and the agent was condemned either as dangerous or as useless. As electricity for illuminating purposes differs from electricity as a motor, so does the electrotherapy of the neurologist differ from that of the gynecologist, and I look upon the clear understanding of this distinction as absolutely essential to the development of electrotherapy; the want of it has been one of the most effective bars in the way of progress. Success was impossible with the indiscriminate application of electricity in the various branches of medicine; in gynecology we deal with resistances of 200 and 300 ohms, as low as 40, but never above 600 or 800, whilst we use currents up to 250 milliampères, most commonly between 20 and 80 milliampères; the neurologist, on the contrary, rarely goes as high as 20 milliampères, and usually uses from 2 to 5 milliampères, and the resistance of the tissues between his electrodes is from 5000 to 10,000 ohms and over.

An essential to successful gynecological electrotherapy is a smooth current, the most complete avoidance of shock, which is, on the contrary, a valuable feature in the practice of the neurologist; we carefully avoid the effect of opening, closing, and reversing of the current, which is a highly important diagnostic and therapeutic resource in neurology.

Successful electrotherapy was impossible as long as electricity was looked upon as an agent applicable here and there in the same way, and it has been my aim to establish and develop gynecological electrotherapy: as in all matters, if we wish to succeed we must ourselves work to our own especial purposes, I have, therefore, confined my work and my writing to the subject of *gynecological electrotherapy* and I wish it to be clearly understood that I make no reference to other applications.

The conditions are peculiarly favorable for the application of electricity to the female pelvic viscera:

1. The current can be confined to the part under

[1] *Ten ampères* is the current used for the large electric lights on our streets; inside lights in hotels and stores need a current of only six ampères.

Ten ampères, through a resistance of sixty ohms, which is as low a resistance as we may expect in a fibroid, means a force of *six horse* power, this in electro-chemical force or heat would destroy the abdomen in a few moments. Any unlucky fireman who for a moment touches non-insulated parts of a wire carrying a ten ampère current is struck dead, and yet one enthusiastic electrotherapeutist claims to have applied a current of ten ampères to a living woman! Electric measurement is beginning to be appreciated, but is by no means understood.

treatment, as all the organs are gathered within the limits of the pelvis.

2. Diseased organs or morbid products can be reached directly by the electrode.

3. The low electrical sensibility of the parts makes the use of very strong currents possible. The skin, an electrically sensitive part, is not necessarily involved, and if so, only at the site of the indifferent or dispersing pole; as this is the abdomen, the current can be dispersed to any desired extent. The active electrode need never be in contact with the skin, and, however strong the current, the active intra-pelvic pole need cause no pain.

4. The polar method can, by reason of the situation of the parts, be successfully applied and fully utilized, and by this method only are speedy results possible in gynecological practice.

I. Essentials for the Successful Use of Electricity in Gynecological Practice.

As I have discussed the subject at length in my first paper, on "The Use of Electricity in Gynecology," read before the American Gynecological Association, in September, 1886, I will here only recall the important points; these are:

a. Localization of the current. The current must be localized and its effect confined as far as possible to the diseased organ or part.

b. Use of one active pole. One pole exclusively, chosen for its peculiar properties, must serve as the active agent for the application of the current, and upon this its entire effect is concentrated; this is termed the active pole.

c. Dispersing of the current. The current at the other pole must be neutralized as much as possible, and its effect rendered as little as possible perceptible; to accomplish this it is dispersed upon as large a surface as the configuration of the part will permit; hence, a dispersing electrode is used in connection with the indifferent or neutral pole, called the dispersing plate.

d. The active pole should be directly in contact with the organ or part to be acted upon, or even within its tissue.

e. The indifferent or *dispersing pole should be opposite to the active pole so as to confine the tissue to be affected between their surfaces;* it must be as near as possible to the diseased part and upon the largest and least sensitive surface which can be utilized.

f. Use of effective currents. Currents of sufficient strength to accomplish the object desired in the shortest possible time, without detriment to the patient, should be used.

The intensity of the current used in gynecological practice varies from 1 to 300 milliampères; of most general use are currents of from 20 to 80 milliampères.

It must be remembered that I am not merely urging the use of currents as strong as possible, but of *currents strong enough to be effective.* Whilst a current of one or two milliampères will relieve the pain of a contusion, a current of ten milliampères will aggravate it. The intensity must be commensurate with the object in view.

g. Precision in dose and measure. Knowledge of the force used and exactness in dosing it are a *sine qua non* to the effective application of electricity. It is as necessary to know the electro-motor force of the elements and the milliampère intensity of the current used as it is to know the strength of a chemical solution, and the number of grains of the drug which are to be given.

h. Use of proper instruments is as necessary to the electrotherapeutist as it is to the surgeon. The battery, by which the force is generated, is useless without proper means of dosing and of applying it, the milliampèremeter; suitable electrodes for the application of the current at the active pole, and for its dispersion at the indifferent pole, are fundamental requirements for a successful electrotherapy.

Upon the acquisition of these aids the recent progress of gynecological electrotherapy is based.

i. Recognition and proper use of the various qualities of the electric current. The electric current, both galvanic and faradic, is a most subtile agent, which may be made to serve many purposes, and which possesses numerous, greatly varying, and even antagonistic properties, which can be developed at will by the accessory apparatus and the method of application.

The following are the most important factors by which the properties of the electrical current are changed, and upon which its varying medicinal effect depends.

Galvanic.	*varies with* Faradic.
Intensity; number of elements.	Intensity; distance between primary and secondary coil; influenced less by electro-motor force of generating element.
Pole; negative, alkaline, fluidifying, stimulating; positive, acid, coagulating, sedative.	Pole; slight difference; negative, more irritating, painful; positive, less painful, more serviceable for deep application.
Time of use.	Time of use.
Constancy.	Number and length of interruptions; method of increase and decrease.
Size, shape, and material of electrode.	Size, shape, and material of electrode.
Metallic for chemical effect.	Metallic for irritation.
Moist, non-metallic, for distribution and penetration.	Moist, non-metallic, for penetration.
	Length and thickness of wire in secondary coil.
	High tension, effect on nerves by long secondary coil of fine wire.
	Quality and low tension, effect by short coil of heavy wire.
	Primary current more penetrating with metallic electrode.
	Secondary current more penetrating with moist, non-metallic electrode.

The therapeutic effects developed by the various properties of the current, so changed, are numerous, and electricity may be applied to serve as a

Sedative.
Stimulant.
Counter-irritant and vesicant.
Muscle contractor.
Antispasmodic.
Tonic.

Promoter of development.
Absorbent.
Chemical cautery.
Coagulator.
Electrolytic.
Hemostatic.
Promoter of hemorrhage.
Decongestor.
And as a medicator.

II. Manner of Application, Electrodes, and Instruments to be Used.

The greatest concern is generally felt in regard to the point of least possible importance—that is, the battery itself; the question, *What is the best battery?* is so often asked that I will again repeat that *this is immaterial as regards the effect.* The current is the same, whether we use the sulphate of copper telegraph cell, the zinc and carbon telephone cell, the Leclanché cell, or any of its modifications, or the ordinary medical dip battery. The physician must adapt his battery to his convenience and to his pocket. For stationary and cabinet batteries I deem the sealed Gonda Leclanché or the Diamond the most convenient; both with muriate of ammonia, zinc, and carbon; the former with the oxide of manganese disk in place of the porous cup, which is liable to clog. This battery works steadily, and requires the addition of distilled water every six months, cleansing and refilling every year. The fluid is simple, non-corroding, and odorless. Portable batteries are now made with similar hermetically sealed cups of smaller size, and these, of course, are far more convenient than the dip batteries, which have so long ruled; of these, the Stöhrer battery was the type. It seems, indeed, strange that in this progressive inventive country, from which all electric progress comes, these filthy, corrodable batteries should so long have remained the universal favorite. The hermetically sealed open circuit battery, with dry cups, or, at least, with harmless, odorless fluid, is the battery of the future for cabinet and portable purposes.

The important instrument is the milliampèremeter, graded for general purposes from 1 to 100, for special work from 1 to 250 or 300. No work can be done without this, and it must always be in the circuit to be really useful.

The current selector I need not mention, as no battery is without one, and it is all-important that we have this means of gradual increase of the current, element by element, which I deem of more general utility, more simple, and almost as gentle as the water rheostat.

The wire rheostat to measure resistance, the interruptor, the metronome to break the current, the rheotome to change the current, the water rheostat to interpose resistance, or increase or decrease the current without even the slight jar occasioned by the insertion of single elements, are not necessary for ordinary work; but these, like the coulombmeter to measure the quantity of electricity, the voltmeter to measure the electromotive force of the elements, and the ampèremeter to measure their ampère capacity, are all demanded for progressive scientific investigation.

The *electrode*, the most simple of all the accessories, and on account of its very simplicity the most neglected, is as important as the battery itself. I blame that despicable sponge electrode in part for the neglect into which electrotherapeutics have fallen in this country; every battery was supplied with two of these abominations, and as the practitioner soon found that he could not accomplish much with them, he thought electricity useless and put aside his battery.

The sponge electrode is a filthy, current-absorbing instrument, which must be cast aside. If a small electrode is wanted, the metal plate can be used, covered with absorbent cotton soaked in warm water; this offers no appreciable resistance and is renewed without any trouble for each patient; in fact, time and trouble are saved, as it takes more time to soak thoroughly the sponge electrode than it does to cover the disk with absorbent cotton and apply this instrument, which is saturated by momentary immersion.

I propose to speak more fully of the *dispersing electrode*, as it is this which is so important, partially so from the fact that on account of its very simplicity it has been neglected. Electrodes for various purposes, for use in connection with what I call the active pole, have been devised in numerous forms to suit the locality in which they were to be used, throat, ear, uterus, or bladder, but where any but the mildest currents are to be applied these are ineffective unless the current at the indifferent pole is sufficiently dispersed; only by rendering the neutral pole painless, by dispersing the current at this pole sufficiently to render it indifferent, can the other active pole be effectively used.

For this purpose then we must have an electrode of large surface and of good conducting material, so that the resistance it offers is reduced to a minimum. The stronger the current, the more intense the effect derived from the active pole, the larger must be the surface for its dispersion at the indifferent pole, and the larger must be this surface that the peculiar effects of this pole may be neutralized and that cauterization may be avoided.

The effect of the active pole is in no way reduced thereby, as the density of the current is not appreciably diminished in applications by the polar method, whether the dispersing electrode is large or small.

The larger this is, the better; its size is limited by the surface to which it is applied, and for gynecological purposes three sizes are desirable.

No. 1. 6¼ by 9¼ inches = 58⅛ sq. inches surface.
No. 2. 4½ by 6¼ " = 28½ " "
No. 3. 3½ by 4½ " = 15⅔ " "

No. 3 is used with mild currents, and preferable when possible, as it is easily placed without disturbing the clothing, even under the corset; this should, as a rule, not be used with currents of over 15 or 20 milliampères.

Attached to a long, insulated handle, it makes a good spinal electrode, better for this purpose is one

3 inches by 5 inches, with the same surface (15 square inches).

No. 2 is still readily manipulated, though not so easily shifted from side to side and must be used with currents from 20 to 60 milliampères.

No. 1 is necessary for intensities above 60 milliampères, if the current is to be applied without giving pain; to place this the clothing must be loosened.

These three sizes will generally suffice, although I have used No. 0, 8 inches by 10 inches with a surface of 80 square inches, for the application of very high intensities in electrolysis, and No. 5 for cutaneous faradization, round, 2 inches in diameter, like the old sponge electrode.

I would urge these dimensions for general adoption, in order that that uniformity which is so desirable to an understanding may be attained.

The electrode consists of a pliable sheet of lead perforated with holes one line in diameter, one inch apart, and is covered with a layer of punk or absorbent cotton, which is held in place by a thin buckskin or kid. These electrodes conduct as well, and are in every way as serviceable as the clay electrodes of Apostoli. The cover is immaterial, if a good conductor and absorbent, but it is important that the *plate* be of *very pliable* metal, so as to adapt itself to the undulations of the surface upon which it may be placed.

The electrode must be soaked in hot water, the superabundance of which is expressed before it is placed. The water is to be as hot as it is comfortably borne by the patient; cold water must be avoided, as it lessens the conducting power of the electrode, offers greater resistance than hot water because it does not saturate the epidermis so rapidly, and because it is not only uncomfortable, but might even endanger a patient suffering from a chronic inflammatory trouble, for which we so often make these applications. Salt must be avoided; it is not necessary, as it was for the poorly conducting sponge electrode, the instrument which I suggest being a much better conductor, and salt is injurious to instrument and patient. When used upon electrodes by which currents of high intensity are applied, the electrolytic action of the galvanic current decomposes the salt, and chlorine is developed at the positive pole, by which the amount of pain may be increased and the electrode is corroded. Upon a mucous surface the effect of the chlorine generated at the positive pole from a salt water electrode is very perceptible.

The shape of the electrodes used with the *active pole* varies greatly with the object for which it is applied, and any number have been devised; important for the gynecologist and serviceable in the majority of cases are the following four:

1. A fine, pliable uterine probe, insulated up to within three inches of its end by a glass tube which can be removed (glass or hard rubber being preferable as they can be washed in acids and rendered thoroughly aseptic).

2. A heavy, but pliable uterine sound, equally insulated.

3. A needle or stylet for puncture, to be used within the tissues, with movable insulator.

4. A metal ball or oval-shaped electrode with six-inch insulated stem, for vaginal applications.

These electrodes must be so arranged that firm connection, best by a screw, can be made with the rheophore; and one of the intrauterine electrodes must be of non-corrodable metal, best of platinum, for use in connection with the positive pole; as oxygen and acids are set free at this pole, an electrode of corrodable metal is soon affected and is not only rendered useless, but is imbedded in the tissues and hard to withdraw.

It will be found convenient to have a stylet and sound in one and the same instrument, of platinum, one end straight and pointed, the other curved and blunt, which can be inserted with either end in the handle, to be used as a sound or stylet.

(To be continued.)

THREE CASES OF LIGATURE OF THE EXTERNAL CAROTID ARTERY, IN TWO OF WHICH BOTH VESSELS WERE TIED SIMULTANEOUSLY.

WITH REMARKS ON THE HISTORY OF THE OPERATION.[1]

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I THINK it to be both proper and essential to recall, in connection with these cases, something of the early history of the operation, even at the risk of adding burdensome details to a subject that has so recently been considered by the members of this Society.

The first case, of which a definite record can be found, was operated on by M. Gensaul, at the Hôtel Dieu, September 20, 1824, while he was engaged in the removal of the parotid gland for malignant disease. There is no reason to believe that he, at that time, considered the ligature of this vessel as one of the steps to extirpation of the parotid gland. It appears, rather, that the vessel was tied during the course of the operation, without this step having been considered as a special preparatory measure. I think it safe to assume, in view of the relation of the parotid gland to this vessel, that the surgeon who extirpated the gland first was the one who first tied the external carotid artery. To Beclard belongs the credit of having furnished the first reliable account of the removal of this gland, which he himself removed in 1823. M. Gensaul repeated the operation in 1826. In both of these cases a cure was effected.

The surgeon who first tied the external carotid as a preparatory measure, of which a definite record can be found, was George Bushe, of the Royal College of Surgeons of Ireland. It was performed in a little patient of about ten and a half years of age, to check a severe hemorrhage following the removal of a pulsating nævus from the temporal region. The removal was not attempted, however, until all other recognized expedients had failed. The little patient made a rapid and satisfactory recovery, which pleased the operator so much that he expressed himself as follows:

"I shall trust in the future to ligature of the external carotid in such cases, and here I may say, that where

[1] Read before the New York Surgical Society, April 27, 1887.

the disease is not in the orbit, I cannot see the necessity of securing the common carotid for anastomosing aneurism of the face and head."

In connection with the remarks just quoted, I will call attention to the history of the first of the three cases operated on by myself.

The patient was admitted to Bellevue Hospital, August 1, 1883; aged twenty-four; family and personal histories good. About six months before admission he was struck in front of the left ear with a bottle, which was broken by the force of the blow. The wound of the scalp healed quickly under simple dressing. A short time thereafter a pulsating tumor appeared at the seat of injury, which increased in size continuously until the date of admission. On admission a well-defined pulsating tumor was found at the seat of the injury, of about the size of a hen's egg, which had a distinct thrill and bruit. The trunk of the temporal artery, together with the anterior and posterior branches, was involved directly in the growth. The trunk of the occipital artery of the same side was dilated, and its anastomotic communications with the branches of the temporal were dilated also. The patient was kept under observation for a few days to study the peculiarities the tumor might present, but inasmuch as its chief feature consisted in its rapid development, it was decided to tie the external carotid artery of the same side, with the view to arrest the growth, if not to effect a cure.

On August 7, 1883, the vessel was tied in the presence of many of the visiting and resident staff of the hospital. It was exposed in the usual manner for about an inch above the point of bifurcation. The lingual branch arose about half an inch above that point, and it was tied at once with an independent catgut ligature. After this, the trunk of the external carotid was tied with catgut at the origin of the already ligatured lingual branch. The previous tying of the lingual had provided a branchless portion of the external carotid of about an inch in extent. The ascending pharyngeal branches were sought for, but were not found. Nothing unusual was noticed during the operation, except that the internal jugular vein overlapped the external carotid at the seat of ligaturing. The ligaturing of the external carotid checked the pulsation and all other aneurismal manifesations of the growth at once, also reduced its size to about one-third of the previous dimensions.

The operation was done antiseptically throughout, and the wound had healed entirely at the end of ten days, when the first dressing was removed. At this time a slight returning pulsation could be detected in the tumor, which, however, could be controlled completely by pressure on the external carotid of the right side. On August 30, the pulsations had increased, and the thrill and bruit were again noticeable. On September 8, the pulsation, the thrill, and bruit were nearly as strong as before the operation, but they could be controlled readily by pressure made on the occipital and temporal branches of the external carotid of the right side. The temporal branch only of the external carotid of the left side gave any evidence of a return of the circulation. It then became a question of tying the external carotid of the right side, or of tying its temporal and occipital branches alone, or to attack the growth itself directly. The latter plan was chosen, and was carried into effect September 26, only about seven weeks after the primary operation.

I trust that I may be excused if I digress somewhat at this time to describe the details of the method that was adopted for the radical cure of this case. The head was surrounded by two strong rubber bands, beneath which compresses were placed at the points where arteries passed to supply the scalp. By this means the arterial circulation of the scalp was controlled admirably. The growth was then nearly circumscribed just outside of its limits by a U-shaped incision, made through the healthy tissue of the scalp, down to the bone. The stem of the flap was made about an inch and a half in width, and it extended down to the zygoma, and the centre of its long axis corresponded to the course of the temporal artery. The loss of blood was not severe, since a bleeding point could be readily controlled by pressing the vessel against the underlying skull, while its open extremity was being secured. The bleeding points were closed by catgut applied directly to them, when possible. If this could not be accomplished, they were closed by the overhand continuous suture of catgut carried around and through the borders of the divided tissues. The flap and the surface from which it had been raised were kept separated with antiseptic gauze until granulation took place; then they were fastened in apposition by adhesive straps. They united quickly, and a permanent cure resulted one month after the operation.

The following interesting practical facts are presented by this case:

1. The ligaturing of the external carotid of one side had but a temporary effect on a vascular growth that involved the branches of the ligatured vessel.

2. Pressure on the branches of the opposite external carotid artery interrupted the characteristic aneurismal manifestations that were present in the growth at its recurrence.

3. The ligaturing of all the vessels that passed to the growth, except the one of the pedicle of the flap, followed by independent granulation of the surfaces and their subsequent union, resulted in a rapid and complete cure.

I find eight additional cases of ligature of the external carotid for the cure of aneurismal tumors of the head, face, and parotid gland, in two of which both vessels were tied simultaneously. The latter procedure is not reported to have been successful in either instance. Traumatic aneurism of the parotid gland, varicose aneurism of the ear (two cases) are reported to have been cured by ligaturing the external carotid of the diseased side. It appears, however, that the last two cases received other and decided local treatment, which might have had quite as much to do with the cure as the ligaturing of the external carotid. This fact is emphasized by the recollection of the unsuccessful cases just mentioned of a practically similar nature, in which ligature of both external carotids alone failed to effect a cure. Of a total of nine cases, but one, traumatic aneurism

of the parotid, was cured by ligature alone. These facts force the conclusion that ligaturing of the external carotid of the diseased side, and even of both external carotids, can be considered only as palliative, and cannot be recommended as a means of cure for vascular growths of the head and face, except in connection with other measures.

I do not think it to be a justifiable step to ligature the common carotid alone, nor in connection with ligature of the external or internal carotid for cases like the preceding, since the rate of mortality for ligature of the common carotid is 40 per cent., while that for ligature of the external carotid is 3.62 per cent. This opinion is expressed notwithstanding the fact that the rate of cure for non-orbital anastomotic aneurismal formations is reported by Dr. Wyeth at 28½ per cent. from ligature of the external carotid. It seems to me from these facts that some errors must exist in the primary reports of these cases, since the reverse of these figures would be more consonant with the anatomical bearings of the collateral circulation of the two operations.

Ligature of the common carotid should not be entertained except when from the contiguity of the morbid process the application of a ligature to the external carotid becomes impossible, or when ligature of the external carotid has failed to afford its possible relief; a contingency that is to be anticipated only when the morbid growth is developed at the location of a free anastomosis of the branches of the external carotid and the intracranial circulation, as in intraorbital formations especially.

The second authentic ligaturing of the external carotid, as a preparatory measure, was practised by John Lizars in 1830. It was done to lessen the hemorrhage attendant on removal of the superior maxilla. Preparatory ligature of the external carotid for removal of the superior maxilla, is not necessary for the safety of the patient, except in such cases as, when the patient is ill able to withstand the loss of blood that ordinarily attends this procedure; or to bear the loss that may arise from the removal of the morbid growth that prompted the operation. I am certain, however, that ligature of both external carotids and their ascending pharyngeal branches prior to the removal of large vascular growths involving the superior maxilla and the pharynx, or retro-pharyngeal growths of a similar nature, requiring the preliminary removal of the superior maxilla, should be earnestly commended to the profession. If the growth be of a malignant nature, this plan will not only lessen the hemorrhage attendant on its removal, but may likewise delay the return by lessening the activity of the nutritive processes at its site.

The third case of preparatory ligature of this vessel was performed by Dr. Valentine Mott, about the year 1831, for extirpation of the parotid gland. The swelling of the soft parts contiguous to the diseased gland, complicated the operation somewhat; still, the patient suffered no ill effects from it, but died in less than two months thereafter from a return of the disease.

The rate of mortality of ligation of the common carotid for reputed malignant disease of the parotid gland, antrum, and face (not of orbit), is, according to conclusions of Dr. Wyeth, 44 per cent. from the operation alone, with 15 per cent. of cures resulting therefrom. I have collected nineteen instances of ligature of the external carotid for so-called malignant growths located in practically similar situations, with the loss of but one patient, who died of hemorrhage caused by sloughing of the growth. This case will be fully reported in the course of this paper.

Twenty-six per cent. of these so-called malignant growths are reported as "cured" by ligature of the common carotid. This seems inconsistent in view of the nature of the disease, a fact that was appreciated by Dr. Wyeth when he collected them. It is fair to assume, however, that if ligature of the common carotid will cure malignant disease of the face, ligature of the external carotid should lead also to a similar result. If the idea be to starve a growth, then truly, from anatomical reasons alone, ligature of the external carotid is the far more rational measure; because if the external carotid be ligatured, but comparatively little blood can reach the diseased part except by way of the opposite external carotid, provided there be no unusual anastomosis of the ligatured vessel. If the common carotid be tied for disease associated with the branches of the external carotid of the same side, then blood can reach the diseased part, not only through the opposite external carotid, but also by way of the circle of Willis, and the pervious internal trunk of the ligatured vessel.

With a full knowledge of these anatomical facts, and with the great difference in the death-rate of the respective operations, I fail to find an excuse even for ligaturing the common carotid for disease of the region supplied by the branches of the external carotid, except when ligature of the latter vessel is impracticable.

I will now present for consideration the history of two cases of my own, in each of which the external carotids were tied simultaneously for malignant disease involving the inferior maxilla, the floor of the mouth, and more or less of the tongue. In each of these cases repeated operations had been performed for the removal of the disease. A rapid recurrence had taken place in each instance, until the direct application of the knife seemed no longer feasible. The starvation plan appeared to be then the only one to offer any chance for delay to the course of the growth, combined with the greatest degree of comfort for the patients.

Recalling the fact that in the aneurismal growth, upon which I had previously operated, the collateral circulation from the opposite external carotid had reëstablished the circulation of the ligatured side within two months, and believing that it would likewise exercise the same influence in a similar operation for malignant disease, it was determined to tie both external carotids simultaneously, which was done in the first case on February 2, 1885. The incisions for ligaturing were made in the usual situations, and the enlarged lymphatic glands that were found in their course were removed. When the carotids were reached, most unusual anomalies were found. The right common carotid bifurcated be-

neath the posterior belly of the digastric muscle, which was divided to admit of the more easy application of the ligature. On the left side the bifurcation was located behind the hypoglossal nerve, which was drawn down and then the ligature was applied just below the posterior belly of the digastric. On the right side the superior thyroid branch was thought to be seen to arise from its usual position. No branches were found above the point of bifurcation for the distance of one inch, and a catgut ligature was applied at the middle of this space. The lingual and facial branches were not seen on the right side, a fact that caused no apprehension, for I had been informed that the facial had been tied some months before, during the removal of the diseased submaxillary gland of that side. I thought also that the lingual might have been associated with the facial, since this arrangement exists in about 25 per cent. of dissections. On the left side the branches of the external carotid were normally arranged. The lingual was ligatured at its origin, and the trunk of the external carotid was ligatured just below this.

No annoyance took place during the operation other than that due to the slipping off of a catgut ligature from the proximal extremity of the purposely divided facial vein, that had covered the artery in the line of the operation. The operation was done antiseptically throughout. The malignant growth diminished in size rapidly; the pain ceased; the discharge became scanty, thin, and watery, and the ability to speak and to swallow improved rapidly. On the fifth day a portion of the tumor on the right side, corresponding to the former site of the submaxillary gland, sloughed out, leaving an opening an inch in diameter, bounded by sloughing tissue, at the bottom of which could be seen necrosed bone of the lower jaw. It had been ordered that the patient be constantly watched from a fear that hemorrhage might occur. On the night of the 11th, nine days after the operation, the patient was discovered deluged with blood, and he died from its loss before morning, in spite of every possible effort of Dr. Pinkerton, the house surgeon. Even transfusion with saline solution was employed.

It was found that the hemorrhage had taken place from the site of the slough before mentioned. An abnormality of the circulation was suspected at once, and the suspicion was confirmed subsequently by a careful dissection. The facial and lingual branches of the right side arose from a common trunk at the bifurcation. The fatal hemorrhage had been caused by sloughing of some of the starved diseased tissue, into which the stump of the abnormal facial artery had passed. The vessels on the left side were not uncommon in their arrangement. The operation-wounds themselves presented no appearances of an unusual character.

It is seen at once that this case presents very rare anomalies of the circulation. It is very rare indeed that the common carotid arteries do not bifurcate at, or between, the upper border of the thyroid cartilage and the greater cornu of the hyoid bone. I can find no record of the lingual or facial ever having arisen from a similar point, as in the above case. Dr. Wyeth, in his report of 121 consecutive dissections of the external carotid and its branches, found but four instances in which the lingual branch was given off at a fourth of an inch above the bifurcation, and in only one of these did it arise independently of the facial branch. In one instance it arose an eighth of an inch above the bifurcation by an independent origin. The average origin of the lingual in 121 cases was 0.68+ inch above the bifurcation. In these same dissections the facial arose at an average of 0.92+ inch above the point of bifurcation. In no instance did it arise independently within less than a fourth of an inch from this point. In one instance only the lingual and facial arose by a common trunk an eighth of an inch from the bifurcation. I have no doubt that if I had tied the branch at the bifurcation which I had supposed to be the superior thyroid, but which was, in fact, the common trunk of the facial and lingual, the patient would not have died from hemorrhage.

The result of this case emphasizes some important facts, viz.:

1. The tying of the external carotids robbed the growth of so much of its vitality that, notwithstanding it was presumably supplied in part by the lingual of the right side, and also by branches of the pervious stump of the facial of the same side, the diseased tissue sloughed and involved thereby the stump of the facial itself.

2. The branches at the bifurcation should be tied when it appears that neither the lingual nor the facial arise from the first inch and a half of the external carotid.

3. The feasibility of simultaneous ligature of both external carotids for the starvation of malignant growths of the regions supplied by their branches, is emphasized by the effects on the growth in this case.

The number of deaths from ligature of the external carotid alone that may be justly attributed to the operation itself, is somewhat indefinite. Dr. Wyeth reports 67 cases of ligaturing, with two deaths occurring after the operation; but, inasmuch as these two patients were still suffering at the time of their death from the gunshot wounds for which the operation had been performed, it is certainly not proper to charge these deaths to the operation alone. I am able to add to this list 16 others, and in but one of these (my own) did the subsequent death of any bear the least relation whatever to the operation itself.

The amount of objection that may be raised to ligature of the external carotid by reason of the death just reported—a death clearly dependent on abnormalities of the circulation not before described—is a matter that I will leave to others than myself to express. Hemorrhage at the seat of the operation has never as yet proved fatal, and it has, as a rule, been controlled easily by simple means, as pressure, styptics, etc. In a number of instances hemorrhage has taken place at the seat of the injury or of the disease, for the relief of which the vessel was tied, and it has required ligaturing of the common or internal carotid of the same side to control it. But, in no instance, can I find that the opposite external carotid has been tied with the same view.

The second case was performed in Bellevue Hospital, May 10, 1885. It pursued subsequently, in all important respects, a similar course to the first, except that no hemorrhage or sloughing occurred. The patient was discharged from the hospital in one month, much improved, with instructions to report at intervals of a week. He reported at the hospital as requested for the next two months. During this time the growth showed but a little tendency to increase in size. The pain and difficulty in swallowing did not return. However, in the meantime he had developed a profound cancerous cachexia, attended with emaciation and loss of strength. No evidences of internal cancerous involvement were discovered. Finally, he disappeared suddenly, and was not again heard from by myself, even though his recorded address was visited and a thorough inquiry was made to ascertain his whereabouts.

The main objections that are raised against ligaturing the external carotid are the following: 1, the difficulty of the operation; 2, the danger of secondary hemorrhage at the seat of the ligature. It is no doubt true that ligature of the external carotid is not as easily accomplished as that of the common trunk, but this is no reason why it should not be practised in preference to the latter when the comparative results of the two are considered. The linear guides of the two vessels are equally simple. The primary incisions of both are alike uncomplicated, provided the region of the external carotid is not invaded by disease. The deep guides of the external are as plain and unvarying as can be wished. The digastric muscle and the hypoglossal nerve are constant in their relations to this vessel. The lingual vein, the facial vein, and its connections, are obstacles to ligaturing of the external carotid; but, with care, they can be displaced, or they may be divided between two ligatures, and turned aside. The internal jugular vein sometimes encroaches alike on both vessels. The external carotid may be mistaken for the common, as for the internal carotid. The points of origin, size, and direction of the branches of the external should enable the distinction between it and the common trunk to be easily made. The difference in the origin, course, and depth of the two vessels, to say nothing of their differences as to branches, should discriminate between the internal and the external carotids. Finally, if a doubt exists after the ligature is passed, raise the vessel gently from its bed by means of the ligature, and study the effects of the ligature pressure on the branches of the external carotid, and on the trunk of the internal carotid.

Care should be taken not to pass the ligature around both vessels at the bifurcation. This is an error to which the relations and appearances of the vessels in this situation add but little that is reassuring. However, to state the liability of the error should be to signal the danger with sufficient acuteness to prevent its occurrence. It is proper to add in this connection that if ligature of the external carotid be associated with removal of the parotid gland, it should be ligatured as near to the gland as circumstances will permit.

In conclusion I respectfully submit the following propositions:

1. Ligature of the external carotid artery, together with independent ligature of the branches arising from the first inch of its course, is a safe and commendable operation.

2. When the facial and lingual arteries do not arise singly, or by a common trunk from the first inch of the course of the external carotid, the branches arising at the point of bifurcation of the common carotid should be tied.

3. Simultaneous ligature of both external carotids is a rational preparatory measure for operations involving the parts supplied by their branches when dangerous hemorrhage is feared. If the pharynx be involved, the ascending pharyngeal branches should be ligatured also.

4. Simultaneous ligature is advisable as a final expedient to diminish the rapidity of the development of extensive malignant growths when they are nourished by the branches of the external carotids.

5. Ligature of one or both of the external carotids for the cure of aneurismal formations of the branches of the same is not feasible as an independent curative measure.

6. Ligature of the common carotid should not be done for the cure or for the arrest of morbid conditions involving the external carotid or its branches, except as a final resort.

MEDICAL PROGRESS.

POINTS IN THE DIAGNOSIS OF BRAIN DISEASES.—NOTHNAGEL, in an article read recently before the College of Physicians of Vienna, gave the following diagnostic points on the value of headache as a symptom of brain disease:

1. In brain tumors headache is of very little value in diagnosis; we know that the cerebral substance is not sensitive; the pia mater but little sensitive, and the dura mater only, of the cranial contents, is sensitive. Headache occurring in cases of cerebral tumor is explained by tension upon the dura caused by the bulk of the tumor.

2. Headache is present in inflammatory processes situated in the meninges, and more frequently in lepto-meningitis than in pachymeningitis; in lepto-meningitis the headache frequently changes its characters.

3. Headache is present in chronic cerebral hyperæmia and also chronic anæmia; it is questionable whether anæmia alone is the important element in chlorosis, as we see most marked cases of pernicious and intensive anæmia caused by carcinoma in which headache is absent. Headache is rarely present in insular multiple sclerosis; in cerebral abscess its presence and character are extremely variable. The location of the headache gives no certain diagnostic point for the determination of the location of the lesion, although in general terms it may be said in the majority of cases the lesion is where the headache is.

Vertigo, while common in various cerebral diseases, is of little importance; when it is excessive and accompanied by incoördination, such as occurs in diseases of the crura of the cerebellum, it has decided import.

Vomiting is rarely of great value in diagnosis; it aids chiefly in the location of lesions. It can be present in cases in which the amount of blood in the brain is abnormal, and an irritation of the centre of emesis in the medulla oblongata exists.

We are aided by this symptom in diagnosticating lesions of the tissue in the posterior fossa of the skull; for example, tumors which originating in the cerebellum press upon the medulla; or tumors of the medulla or pons.

Fever is an important symptom in but few cerebral diseases. The highest temperature is present in meningitis, especially in its infectious form. But as peritonitis without fever is often observed, so meningitis may run its course without marked rise of temperature. Fever occurs in cerebral abscess and septic phlebitis of the cerebral sinuses; it has then more often the characteristics of septic fever with pyæmic chills, and does not depend directly upon the phlebitis, but upon pulmonary embolism. Fever also occurs in the course of progressive paralysis. The pulse gives no certain criterion for the diagnosis of a given cerebral disease. It is often, however, of value in the abnormalities of its rhythm in beginning meningitis, in the form of regularly occurring *arythmie* (first described by Nothnagel), where a certain periodicity in the variations of the pulse frequence occurs; the increased number of beats endures but a few moments, and is caused by an irritation of the pneumogastric nerve. The respiration gives no information in the diagnosis of brain diseases.

Regarding disorders of speech, aphonia is seldom present, and the location of the lesion which could cause it, in the medulla oblongata, is such that death generally results speedily in these cases. Speech is affected most often in progressive bulbar paralysis, and frequently in multiple sclerosis in patches. Speech is also implicated in progressive paralysis when the origin of the hypoglossus is affected; also in cortical disease of the lower portion of the central gyrus.—*Wiener medizinische Presse*, No. 13.

PEPTONE SUPPOSITORIES.—SAUTER prepares these suppositories with cacao butter, each containing twenty-five grains of peptone; they are mixed and kept cold to prevent the fat from becoming rancid. In cases where patients cannot be nourished in the normal manner they serve an excellent purpose, fifteen grains of dried peptone equalling two and a half drachms of meat in nutritive value. Children may be given one suppository four times daily; grown persons, two three times daily. The suppository should be lubricated with olive oil, and the rectum previously cleansed by an enema. —*Pharmaceutical Record*, No. 5.

TREATMENT OF TYPHOID FEVER AT ROOSEVELT HOSPITAL.—DR. ASTA-BURUAGA reports, in the *New York Medical Journal* of April 30, 1887, the treatment of forty-five cases of typhoid fever in this hospital as follows:

The treatment was mainly expectant. Equal parts of milk and lime-water constituted the sole diet as long as the fever lasted. Forty grains each of subnitrate of bismuth and pepsin, divided into four doses, were given in the milk daily. Stimulants in the shape of whiskey were ordered according to requirements.

The convalescents were allowed solid food, commencing with tenderloin steak on the tenth to the twelfth day after the subsidence of the fever, and were generally allowed to sit up about five days later.

Small doses of Fowler's solution of arsenic were given, with good results, when the fever was protracted.

Antipyretics were required in several cases. Antipyrine, antifebrine, the cold pack, the cold bath, and the abdominal water-coil were used.

The mortality was 8.88 per cent.

MICROBE OF YELLOW FEVER.—FREIRE, GIBIER, and REBOURGEON describe the microscopic appearances and behavior of this bacillus as follows: The microbe is very mobile; grows rapidly in bouillon when taken from the blood and urine; a dark substance, like black vomit, and having its odor, forms at the bottom of the tubes of culture. Inoculation with the blood of those dying with yellow fever produces an identical disease. Culture liquids undergo spontaneous attenuation in a few days. Inoculations with attenuated cultures have been very successful in the hands of the writers.—*Gazette Hebdomadaire*, No. 12.

THE BACTERIAL TREATMENT OF PHTHISIS.—FILIPOVITCH reported before the Medical Society of Odessa six cases of phthisis treated by Cantani's cultures of bacterium termo in bouillon. Liquid containing the bacteria was flavored with mint and inhaled. Of the six patients three died, two went from the hospital unimproved, one remained. The results obtained were an abundant growth of the bacilli inhaled in the lungs of the patient. The treatment was useless at best; in some cases harmful.—*Les Nouveaux Remèdes*, No. 6.

FORMULA FOR OIL OF MALE FERN.—

℞.—Ol. filicis mar. . . . . ♏ 45.
Tinct. vanillæ . . . . ♏ 45.
Syrup. terebinth. . . . . ʒ 6¼.
Gummi arab. pulver. . . . gr. 30.
Aquæ destillat. . . . . ʒ 6¼.—M.

This should be taken at one dose, with an equal amount of milk. Castor oil should be given several hours afterward.—*Journal de Médecine*, April 17, 1887.

HOW TO EVACUATE PSOAS ABSCESSES.—DR. OWEN, of London, describes his method as follows: The method of evacuating psoas abscess, which I have adopted in a large number of cases, and which I recommend with confidence, is by a free anterior as well as posterior opening, and by then washing and draining the cavity right through. The first opening I make close above the outer end of Poupart's ligament, using the scalpel until about an inch of the length of the fibres of the aponeurosis of the external oblique has been exposed. I then scratch through the fleshy attachment of the internal oblique and transversalis, and, keeping well below the level of the peritoneum, thrust the director into the swelling. Pus escapes, and the opening is enlarged by the dressing forceps and the finger. A stiff probe is then passed through the abscess cavity and made to project beneath the skin on the outer side of the erector spinæ. With this as a guide, a counter-opening is made in the loin. The large cavity

is then flushed perfectly clean with a warm antiseptic solution, and a drainage tube of the size of a penholder is laid through the chasm for a few days, being afterward replaced by a silk thread. The parts are liberally covered with bulky pads of wood-wool and finely picked oakum in gauze bags; these are kept in position by a towel arranged as a binder, which, for the sake of compression is tightly drawn and fixed with safety pins. Next day the cavity is again washed out, under chloroform, if necessary, the wounds being dressed as before. After this, the less it is interfered with the better; if the temperature do not rise, and the discharge do not soak through, the dressings may be left for three or four days, or longer. From the first day the discharge becomes thin and watery; suppuration in the ordinary sense of the word is at end, and the cavity steadily contracts into a narrow passage.

If the abscess be so small that the surgeon does not feel inclined to attack it from the front, he may readily work down on to it above the iliac crest, on the outer side of the erector spinæ. The scalpel is needed only for the skin incision, the rest of the operation being performed with equal ease and safety by the use of a steel director and the ring dressing forceps—at any rate in children.—*British Medical Journal*, April 23, 1887.

A SEDATIVE HYPODERMATIC INJECTION.—

℞.—Caffeine	gr. ⅙.
Morph. sulphat.	gr. ⅙.
Atropiæ sulphat.	gr. $\frac{1}{120}$.
Aquæ camphorat. . . .	♏. 20.

Its use is said to be without the disadvantages of morphia alone.—COCHRANE in the *Revue de Thérapeutique*, March 15, 1887.

OIL OF ERIGERON.—DR. BARTHOLOW writes as follows in the *Physician and Surgeon* for April, 1887:

That oil of erigeron is entitled to the repute it had at one time as a remedy for certain kinds of hemorrhage, I am well assured by recent experiences. Some time since, casting about for a remedy in a case of metrorrhagia that had severely tried my resources, I fell on erigeron oil, but with a rather despairing sense of its probable inutility. I was proportionally pleased to find that it acted admirably. As one case can no more establish the value of a remedy, than one swallow can make a summer, I have since made numerous observations with the view to ascertain its real powers. I am accordingly in a position to re-affirm the statements formerly made, and to express my belief that in oil of erigeron we have a valuable remedy for certain cases of menorrhagia and metrorrhagia, and probably, passive hemorrhages in general. In some cases of *neurasthenia*, it now and then happens that menorrhagia becomes an embarrassing complication; but I have found erigeron oil to act very efficiently, and while it has moderated the flow to proper dimensions, has improved the general condition, and lessened the nervous irritability.

For the most part, the uses of oil of erigeron for the conditions above mentioned are not novel. Finding, however, that it is a really effective remedy in menorrhagia and metrorrhagia, I then had recourse to it in those conditions having their origin in albuminuria, and then it was I ascertained that it checked remarkably the waste of albumen. From this point it was but a step to observe how far this remedy affects the course of Bright's disease—or such chronic forms of albuminuria as are due to tubal and interstitial nephritis and the cases combining these two morbid processes. No attempt was made to arrive at an exact differentiation, if indeed such be possible. It suffices to state that the chronic cases of nephritis united by the common symptom—albuminuria—were included. In the chronic form of Bright's diseases, erigeron oil lessens the amount of albumen, lowers the abnormal vascular tension, and improves the general condition; it has also seemed to have a most favorable action on the headache, the nausea, and other symptoms of uræmic character. Whether it be actually curative in cases not too far advanced, can be determined only by careful and sufficiently protracted trials. Thus far it can be said to promise well.

Oil of erigeron also acts in a very beneficial manner in cystitis, lessening the irritability of the bladder, and diminishing the catarrh. In a case of prostatic disease with very great irritability of the bladder and much catarrh, it seemed to have an excellent effect.

In catarrh of the bronchial tubes, chronic bronchitis, and in cough of a nervous character, I have seen very considerable relief given by it. Indeed, in these affections it has seemed to me to afford as much relief as *terebene*, which has been much vaunted of late, and with justice.

In administering it, I have usually directed it in five drop doses every three or four hours. It may be conveniently dropped on a lump of sugar. It appears to me to do better in moderate doses rather frequently administered, so as to maintain a constant impression, than in occasional larger quantity.

PHTHISIS IN FAMINE.—DR. PORTER, of the Madras Medical College, writes as follows in the *Indian Medical Gazette*, No. 2: In 459 consecutive autopsies made during the Madras famine of 1877–1878, tubercular deposit was found in one or both lungs in thirty men, 13.3 per cent., twenty women, 12.8 per cent., and in one child. The deposit was present in both lungs in eighteen of the men and in sixteen of the women, was confined to the right lung in three of the men, the child, and three of the women, and to the left lung in nine of the men, and in one woman. The disease was latent in eighteen men, thirteen women, and in the child; death having been due to alvine flux in all these, except two men who died from dropsy, and one who died from starvation apparently. In the remaining twelve men, 5.3 per cent., and seven women, 4.5 per cent. of the total, death was due to phthisis pulmonalis, and these are the cases of which it is proposed to treat here. It may be noted that in nine thousand two hundred and sixty-six admissions to the Royapettah Hospital, two hundred and sixty-two, or 2.8 per cent., were from this cause.

A PRESCRIPTION FOR AFTER-PAINS.—GUÉNIOT, of Paris, gives the following prescription:

℞.—Aquæ tiliæ (linden flower water)	℥22½.
Tr. digitalis	gtt. 12.
Aquæ lauro cerasi . . .	♏ 15.
Syrup of codeia	℥6¼.—M.

This should be taken in three doses in the course of the night, commencing at 9.30. When febrile reaction follows delivery, the prescription is modified as follows:

℞.—Aquæ tiliæ . . . . ℥22½.
Tr. digitalis . . . . gtt. 15.
Aquæ lauro cerasi . . ♏ 15.
Syrup codeia . . . ℥3¾.
Tinct. aconit. rad. . . gtt. 6 to 10.

Syrup of codeia will be recognized as not belonging to the U. S. Pharmacopœia; the alkaloid codeia is in use in the muriate, sulphate, and phosphate; doses of ⅛th of a grain hypodermatically, ¼ of a grain by the mouth, have been given; 10–15 grains have been given in one day in the treatment of diabetes. The rule usually observed in using codeia is that its dosage is about double that of the morphine salts.—*Les Nouveaux Remèdes*, March 24, 1887.

LONG-CONTINUED USE OF CAFFEINE AS A HEART TONIC.—HUCHARD in *Revue Générales de Thérapeutique*, April 7, 1887, recommends the following formula:

℞.—Caffeine,
Sodii benzoat. . . . . āā gr. 45.
Ext. stigmat. maidis . . . gr. 90.
Ol. anisi . . . . . gtt. 3.
Ft. pil. 60 in num.
Sig.—Four to six pills daily.

CATARACT PRODUCED BY SOUND.—VON STEIN, of Moscow, has performed the following interesting experiments, which are quoted in the *Ophthalmic Review* for April, 1887:

The experiments were made upon guinea-pigs. Careful observation in every case showed that the media of the eye were clear at the outset, thus excluding the natural opacities sometimes observed in very young animals. The animal was placed in a box to which an electric tuning fork was attached. Here it was kept for several days before the fork was set in action, in order to exclude the possible influence of the confinement in the box, which admitted no light.

Experiments, eighteen in number, were made upon very young animals, with a positive result in every case.

In the first case detailed the animal was two days old. The tuning-fork gave the note D, 100 vibrations per second. The animal was at first restless, and squeaked. Pulse and respiration quickened. From three to four hours later the pupils were widely dilated and sluggish. After about twelve hours the posterior lens surface showed a stellate opacity, the rays of which were feather-like, especially toward the equator; there was also a general slight cloudiness of the lens. These appearances lasted about twenty-four hours. Gradually the central portion became clearer, while the star faded and finally disappeared. Meanwhile, however, three grayish-white triangular opacities made their appearance at the equator, and gradually extended toward the centre, but did not reach the latter. In four or five days all these changes had vanished, the fork acting continuously meanwhile.

With a three days' old guinea-pig, and a fork of 250 vibrations, a stellate figure appeared on the anterior lens surface at the end of twenty-four hours, and on the posterior surface the following day; the further course was the same as in the former case.

With a five weeks' old animal, and a fork of 100 vibrations, white opacities appeared after about forty-eight hours around the whole equator of the lens; all opacities disappeared in a week.

In eyes enucleated for examination was found sometimes anterior stellate cataract, sometimes posterior stellate cataract, sometimes posterior cortical cataract, or all these varieties in combination.

In adult animals no changes were produced. The phenomenon was exhibited to nearly all the oculists in Moscow.

The author expressly declines to advance any hypothesis to account for the facts observed, but we may permit ourselves some speculative consideration of the matter. An analogy at once suggests itself between the effect of this terrifically loud music on the newborn guinea-pig and the lental disturbance which is known to follow convulsion in the human infant. There is much evidence to show that the tender growth of the human lens may be disturbed or arrested *in utero* by shocks to the system of the mother; and there can be little doubt that the nutritive disturbance which occurs during infantile convulsions suffices to damage the lens fibres then in process of formation. We can well imagine that twenty-four hours' confinement in the resonator of a tuning-fork would powerfully impress the nervous system and the nutrition of a more vigorous being than a newborn guinea-pig; during the period of infancy a lental opacity seems a not improbable expression of such disturbance. It is not necessary, we imagine, to regard the cataract as a direct vibratory disturbance of the lens. It would be interesting to know whether the infant animal was separated from its mother during the ordeal, whether its temperature was maintained, whether it obtained and willingly took a normal supply of nourishment during the period in question, and whether any other signs of perturbation were present. Whatever be the explanation, the fact is most interesting.

A VERMIFUGE POWDER.—

℞.—Calomel . . . . . gr. 2¼.
Santonine . . . . . gr. 1½.
Sacchar. lactis . . . . gr. 15.—M.

This powder should be given in the morning, when the stomach is empty, in a little honey. The dose is for a child four years old.—BOYMOND, in *Journal de Médecine*, April 17, 1887.

VACCINATIONS AGAINST YELLOW FEVER.—FREIRE, GIBIER, and REBOURGEON, report their results as follows (6524 patients were treated):

The mortality in Rio Janeiro, from January, 1885, to September, 1886, was 1675, of whom only 8 had received preventive vaccination; mortality rate among the non-vaccinated, 1 to 100; among the vaccinated, 1 to 1000.

The official bulletins show no epidemic during this time, a result not obtained for thirty-five years previous. The vaccination was gratuitous, and wholly inoffensive. —*Gazette Hebdomadaire*, April 8, 1887.

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SATURDAY, MAY 14, 1887.

TYPHOID FEVER IN DRINKING WATER.

THE value of any source of supply of drinking water has been shown by Koch's recent researches to depend largely upon the number of bacteria the water contains, and the present great desideratum of the water analyst is a simple, unmistakable test for their identification. It will be remembered that Dr. Prudden, in his recent biological study of Hudson River ice (THE MEDICAL NEWS, March 26, 1887), while he found large numbers of various bacteria in the water, failed to discover any pathogenic microorganisms, although he strongly suspected their presence. DR. THOINOT, however, we learn from a recent number of the *Gazette Hebdomadaire*, has been more fortunate, and has detected the bacilli of typhoid fever in water taken from the Seine very near the point at which the supply for the city of Paris is obtained.

The French have given much attention recently to the contagion of typhoid fever, and they have especially studied its bacillus. Our readers will recall the recent interesting case of a family at Pierrefonds near Paris, who were inoculated with the bacilli after a single use of contaminated water (MEDICAL NEWS, December 11, 1886), and the epidemic, in 1885, at Plymouth, in our own country, by which nearly a whole village was decimated by the careless emptying upon the ground of the undisinfected excreta of a single typhoid fever case (*Ibid.*, May 16, 1885), as well as the investigations of Chantemesse regarding the influence of disinfectants upon the typhoid germ (*Ibid.*, April 30, 1887). The persistence of life and the continued virulence of the typhoid bacilli after exposure to the atmosphere and the mechanical effects of a body of flowing water are questions of the greatest importance. It is well known that the diffusion and oxidation of inorganic poisonous matter in running water is Nature's greatest provision for maintaining its purity; but whether poisonous protoplasm undergoes like destruction is not so certain. We may hope that ptomaines developed in an infectious disease and voided with the dejecta will be readily oxidized and decomposed, but if the bacilli of such diseases are to survive their transit through various channels until they appear as living and virulent bodies in our water supply, the danger of infection is greatly increased.

Prudden's investigations upon the presence of bacteria in ice have dispelled the common belief that freezing purifies water. Similar investigations in Germany have yielded identical results. As Sternberg has found the death temperature of the typhoid bacillus to be 132.8° F. (THE MEDICAL NEWS, April 30, 1887), the most rational and convenient germicide at our disposal is heat, and should the slightest suspicion exist regarding the purity of a water to be drunk it should be thoroughly boiled.

It is still safer, however, to strike directly at the source of danger by disinfection of excreta immediately upon their discharge. For this purpose the standard solutions of chloride of lime or of bichloride of mercury and permanganate of potassium, recommended by the Committee of the American Public Health Association, in THE MEDICAL NEWS of April, 18, 1885, should be in common use, and nurses and attendants should be familiarized with the simple procedures necessary for disinfection.

The examination of water to determine its fitness for drinking purposes is becoming recognized as largely a bacteriological study; and it will be one of the most substantial achievements of the bacteriologist when tests for pathogenic bacteria in water are brought into common use.

THE AFTER-TREATMENT OF CATARACT.

IT has recently been alleged that a revolution has occurred of late in the after-treatment of cataract operations, and in the last report of the Presbyterian Eye, Ear, and Throat Charity Hospital of Baltimore, Dr. J. J. Chisolm presents the most enthusiastic statement concerning it. He says that

"In May, 1886, eight months since, a series of experiments were commenced at this hospital, having for their object the doing away with much of the restraint deemed heretofore needful for the successful treatment of cataract patients. At that time in all parts of the world there was a uniform method of treatment in the hands of all eye surgeons. Immediately after an operation every cataract patient had both eyes bandaged with heavy compresses so as to exclude all light. They were then put in dark rooms confined to bed, lying on their backs, with instructions to keep very quiet. They were restricted in their diet, and food was given

to them lying down. . . . . The revolutionary treatment which was instituted at this hospital consists in substituting a strip of the thinnest isinglass plaster for the thick bandages and compresses. . . . . Light sufficient to permit of reading to patients was admitted into the chambers. Patients were not confined to bed, but were permitted to dress daily and eat their usual meals, in this way removing all restraint as to their diet. . . . . The experience of this hospital were published in a medical journal, and so important was it considered that it was copied from one to another till it went the rounds of the medical press abroad as well as at home. . . . . The good work done at our Charity Hospital is evidently not restricted to Baltimore or even the surrounding States. It is far-reaching, extending to very distant countries and to people who speak in unknown tongues their gratitude for release from over-careful, and at all times very annoying, treatment, now proved to have been always injurious."

While this statement may be well calculated to awaken the enthusiasm of the friends and patrons of the hospital, for whose reading it seems, primarily, to have been prepared, and will serve to refresh and invigorate "that local pride which is peculiar to London, Paris, Timbuctoo, and Little Pedlington," when placed before the profession it is likely to call forth criticism as to its accuracy.

What are the facts? For ten or fifteen years, as he states in the *Archives of Ophthalmology* for September, 1886, Dr. Charles E. Michel, of St. Louis, had "discarded bandages and darkened rooms, closing the eye with a single piece of gold-beater's skin one and a quarter inches long by one-half inch wide," and, he says, "I never had any bad results supervene which I could reasonably suspect were even remotely due to this mode of treatment."

When Dr. Chisolm was in St. Louis in May, 1886, at the meeting of the American Medical Association, he stated, by request, before the Section on Ophthalmology, one afternoon, what he had learned that morning, of Dr. Michel's plan of treatment, adding that he thought it seemed reasonable, and that he proposed to give it a trial when he returned to Baltimore.

While we may credit originality to Dr. Michel, he cannot establish any claim to priority in the matter. Twenty years ago, Dr. Levis, in his services at the Pennsylvania Hospital and Wills Eye Hospital in this city, and in private practice, discarded the use of the bandage, substituting adhesive plaster applied to the lids, and keeping patients in undarkened rooms. His plan of dressing and treatment was described in the *Archives of Clinical Surgery* for 1876, page 76, by Dr. John B. Roberts; and we know that Dr. Levis and Dr. Roberts have employed it ever since. Moreover, at the last meeting of the American Ophthalmological Society, Dr. C. R. Agnew said:

"Thirty years ago, coming back from abroad, I adopted the plan, learned of Wilde, of Dublin, and employed also in the Royal London Ophthalmic Hospital, of closing the eye after cataract operation or iridectomy with two narrow strips of isinglass plaster, each one-fourth of an inch wide, placed across the centre of the palpebral slit. For many years I used that method exclusively, It was not until Gräfe so influenced us that I resorted to the use of a modified method of bandaging. In my experience it has never been the practice to incarcerate patients, after a capital operation on the eye, in a dark room, The institutions with which I have been connected have always been as light as any other hospitals."

It seems scarcely necessary to pursue this subject further; we have no desire to rob Baltimore of her due. We freely admit that the change referred to may have constituted a great improvement in the treatment of cataract cases in the Presbyterian Eye, Ear, and Throat Hospital. Unquestionably, to the genius of Baltimore belongs the credit of first calling this change of treatment a "revolution," and of so proclaiming it to "very distant countries;" and we earnestly desire that the stream of gratitude "in unknown tongues" may continue to pour upon her, to the honor of her institutions and the emolument of her surgeons. But as to the after-treatment of cataract cases, a conscientious regard for the truth compels us to say that some good surgeons dispense with the bandage, and have done so for thirty years or more; a larger number of good surgeons prefer to use it; and the amount of restriction advisable is not fixed, but varies with the circumstances of each individual case.

DEATH FROM ELECTRICITY.

SINCE electricity has become the winged Mercury of our time a familiarity has arisen which has bred a partial indifference to the dangers of the electric apparatus now in common use. Within the past week two cases of sudden death from such cause, occurring within two or three days of each other, have been reported.

While our knowledge of the phenomena caused in the human body by electricity is not inconsiderable, we know comparatively little regarding death from electric shock. We find that practical electricians recognize a marked difference in the susceptibility of different persons to electricity, and only employ men to work upon the electric light, who, after trial, are found to be not shocked by the ordinary manipulations which are deemed entirely safe. At the inquest upon a recent fatal case, a workman was brought before the jury, who had severed a circuit of forty-eight lamps, possessing an electric force of over 2000 volts. Although made insensible by the shock, and fastened by muscular spasm to the wires, he was rescued by his comrades. The length of time that he was subjected to this tremendous shock, which was not only the primary current but the current of reaction as well, was several minutes. He recovered consciousness very soon, and although

his hands were severely burned, he made a good recovery.

In one of the recent fatal cases, the workman was splicing a circuit: a projecting piece of severed wire at the junction of the positive and negative wires is supposed to have touched his face while his hand upon the other wire completed the circuit. He thus "shunted" a current of about 2700 volts, from fifty-eight lamps. When we remember that the resistance of the human body, from one hand to the other, is seven or eight times that of the Atlantic cable, and that from the side of the face to the opposite hand is about 5000 ohms, while the resistance afforded by the circuit of fifty-eight lamps on which the man was working was not more than 300 ohms, the reason of the shock is apparent. The shock received in this case was much less than that in the first accident, where the circuit was deliberately cut and the powerful current of reaction was added to the original force. It is possible that had the workman in the second case been promptly removed from the wire he might have been resuscitated; but the influence of individual susceptibility must be an important factor in recovery.

Acting upon this fact, it is the invariable rule of one of our largest electric lighting companies, that when a workman goes upon a pole, or applies tools to the mechanism, the wire or lamp is to be touched by the finger tip; if an unpleasant shock is received, work is not to be done at that time, or extra precautions are to be observed. It is also a rule that the circuits are tested at a certain hour each day so that workmen upon the line may avoid the lamps at this time. Machinery becoming disabled is not to be investigated by its attendant workman, but the superintendent is to be notified. With these precautions work upon electric machinery is not more dangerous than upon other mechanisms. As to its mortality, the superintendent of the company above referred to, was able to recall but nine deaths in different American cities, and in various companies in seven years, and most of these, he said, were caused by carelessness.

As to the *modus operandi* of the shock, the post-mortem examination of the recent case in this city revealed extensive fluidity of the blood, and the disintegration of its corpuscles as the most noticeable condition present. At a meeting of the French Academy of Sciences, on April 4, 1887, ARSONVAL reported, according to the *Gazette Hebdomadaire*, of April 8, 1887, some recent studies upon the mode of death by electricity, which showed that its action was—

1. Direct or disruptive, causing instantaneous, irremedial death by disintegrating effects upon the nervous, vascular, and muscular tissues, which lose instantaneously their physiological properties.

2. Reflex, exciting the bulbar centres in a manner similar to mechanical irritation. In this category is the action of the generators of electricity used in various industries. This reflex action is accompanied by the phenomena of "action at a distance," studied by Brown-Séquard under the names of inhibition and dynamic generation. These phenomena are thought to be the cause of the variation in the effects and lesions produced by the electric shock in different organisms.

Death by shock from generators used in industrial mechanics is thought to be due to reflex arrest of respiration and resulting asphyxia; and the practical deduction from the observations made, is that artificial respiration and other resuscitating measures should be employed in such cases, and with reasonable hope of success if aid be given with sufficient promptness.

PILOCARPIN IN LUNG AFFECTIONS.

THIS well-known alkaloid of jaborandi is experiencing the fate which has befallen so many medicines introduced to the profession with too laudatory statements. For three or four years after its discovery in 1876, the journals were full of observations, experimental and clinical, relating to its virtues, and it was felt that a really valuable addition had been made to the Pharmacopœia. Of late it has lost favor, and there are large institutions in which it is not given once in six months, and we know practitioners who have not ordered a dose for two years. This disuse has arisen in great part from the unpleasant symptoms which occasionally follow its administration, particularly the collapse and vomiting, with depression of the circulation; but too much has perhaps been made of these untoward effects. At any rate, we are glad to see in *Berliner klin. Wochenschrift*, No. 15, 1887, that RIESS, the former Director of the Berlin City Hospital, calls attention to its value in certain lung diseases. In 1880–81 he first employed pilocarpin for the purpose of increasing the secretion of the bronchial mucous membrane, and has ever since made use of it with the most satisfactory results. In cases of old and obstinate emphysema and bronchitis, with dry catarrh and attacks of asthma, the hypodermic administration of $\frac{1}{8}$ to $\frac{1}{7}$ of a grain usually caused a copious secretion from the bronchial mucous membrane, and brought relief after two or three injections. In cases with dyspnœa of a paroxysmal character the action was often remarkably prompt. Possibly also in true bronchial asthma it would be of service, inducing relaxation of the mucous membrane by the copious transudation.

In pneumonia, Riess has used pilocarpin in the stage of resolution, to hasten the removal of the exudate. In six cases the injection was begun the

day after the crisis, and repeated for six days. Resolution took place rapidly, with the expectoration of a copious frothy sputum. In two instances of delayed resolution the action was very prompt.

In the whooping-cough of older children ¼ of a grain daily for from eight to fourteen days was followed by a reduction in the frequency and intensity of the spasms, and the thick, tenacious mucus was more readily expectorated.

In a prolonged experience with the drug, Riess has not seen any dangerous results, though vomiting may occur after the first dose. In the above-mentioned conditions the indications point clearly to its use, and in this direction the remedy is worthy of a more extended trial than it has heretofore received.

DR. ALFRED MEADOWS died suddenly at London, on April 19th, from heart failure caused by acute abdominal pain: he was aged fifty-five.

Among many important positions which he held he was physician-accoucheur to St. Mary's Hospital, and lecturer on midwifery and the diseases of women and children. He had been very active as secretary of the Obstetrical Society, and in 1884 was first president of the British Gynecological Society. He was the author of a manual of Midwifery, and translated and compiled several important works.

THE sixth German Surgical Congress, which met last month at Berlin, elected Volkmann, President, and Bergmann, Vice-President, and Billroth and Spencer Wells, honorary members.

DR. BROWN-SÉQUARD has just been elected President of the Société de Biologie, to serve for five years.

REVIEWS.

MEDICAL ELECTRICITY. By ROBERTS BARTHOLOW, A.M., M.D., LL.D., Professor of Materia Medica, General Therapeutics, and Hygiene in the Jefferson Medical College of Philadelphia, etc. Third edition. 8vo. pp. 304. Philadelphia: Lea Bros. & Co., 1887.

THE fact that this work has reached its third edition in six years, and that it has kept fully abreast with the increasing use and knowledge of electricity, demonstrates its claim to be considered a practical treatise of tried value to the profession.

The matter added to the present edition embraces the most recent advances in electrical treatment.

The author's experiments have led him to believe that the direction of currents of galvanic and faradic electricity has less influence than the strength of the currents in producing given effects; this fact is of importance in estimating the effect of currents upon the vaso-motor and sympathetic systems.

The German nomenclature for the normal formulæ of electro-physiology is adopted in the present edition.

The interest which the recent study of neuritis has excited will be gratified by a description of its electrical treatment. Apostoli's treatment of chronic metritis and endometritis is described, and the value of electricity in gynecology is clearly set forth. In extrauterine pregnancy the author considers electrical treatment incomparably superior in the hands of any but an accomplished laparotomist, to laparotomy. Newman's treatment of urethral stricture receives full exposition. The galvanocautery and lamp, and the "electric osteotome" of Dr. Roberts, of New York, are fully described. Newman's recent treatment of enlarged prostate and villous granulations of the bladder, is quoted in the language of its originator; and a description of the electric light in its recent applications to medicine, and apparatus for producing heat, with a discussion of thermo-electricity, close the volume.

The illustrations are abundant and clear, and the work constitutes a full, clear and concise manual well adapted to the needs of both student and practitioner.

SOCIETY PROCEEDINGS.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, April 27, 1887.

THE PRESIDENT, CHARLES MCBURNEY, M.D., IN THE CHAIR.

CASE OF FRACTURE OF THE FIFTH CERVICAL VERTEBRA, WITH RECOVERY.

DR. GERSTER presented a patient who had recovered from this injury, and related the following history: E. H., æt. thirteen, while bathing at the seashore on August 6, 1886, dove into shallow water and struck his head so violently against the bottom that he was stunned. He was taken from the water by his playmates and was carried to a neighboring hotel. The local physician found that there was paralysis of the left upper and lower extremities, and of the bladder and rectum. There was also paralysis of the right upper extremity (with the exception of the shoulder-muscles) and paresis of the corresponding leg. He saw the boy in consultation on the 8th of August, and found, on examination, that the spinous process of the fifth cervical vertebra was depressed and gave marked crepitus on stretching the patient's neck and then letting go of it. The spinous process of the fourth was abnormally prominent. The head could not be held up without support, and when released it fell over to one side if the boy was supported in a sitting posture. Not knowing that his neck was broken, the family had him sit up in bed, when he complained of severe pain in his head. Weight-extension was applied, and the bladder was emptied by catheter. On the 10th of August he was able to pass his water naturally. By the 25th there was a marked improvement in the right side. The patient was then brought to the city and was placed under Dr. Lange's care at the German Hospital. In October he began to walk with crutches, and he has continued to improve ever since. His gait is still atactic, while the left arm exhibits evidences of ulnar paralysis, especially the "main en griffe;" the

extension of the hand on the arm is incomplete, and as soon as we let go of it it at once recovers its former position. The muscles of the arm and forearm are atrophied and their condition has been but slightly improved by massage and galvanism. No abnormality of outline was to be detected in the neck now, the fracture having become firmly consolidated, while the irregularities observed in the projection of the spinous processes had been smoothed down by the callus. A symptom frequently described by authors—*i. e.*, priapism, had not been present.

DR. PETERS asked how the extension had been obtained.

DR. GERSTER replied, by means of Glisson's apparatus, and also by elevating the head of the bed. In reply to other questions, he said that the patient had experienced relief within thirty-six hours after extension was applied; that a prominence had been felt in the pharynx, which was quite distinct. The patient probably recovered because there was no interference with respiration. There was no paralysis of sensation. No displacement at present could be felt.

CASE OF OLD THORACIC FISTULA CURED BY ESTLANDER'S OPERATION.

DR. GERSTER presented a patient with this history: J. S., æt. twenty-one, a clerk, had empyema of the left side for upward of a year. When he came under his care he had lateral curvature, a large fluctuating swelling, and a sinus in the back, from which issued a profuse, fetid discharge, while he was much emaciated, and suffered with hectic, sweating, etc. On August 25, 1879, Dr. Gerster incised the extensive burrowing abscesses of the thorax, resecting portions of the seventh and eighth ribs, in order to gain room for a large-sized drainage tube. There was a rapid improvement in the patient's condition, but the cavity did not close. On January 3, 1880, he exsected portions of the third, fourth, fifth, sixth, and seventh ribs in the axillary line, making a vertical incision, the exsected pieces increasing in length from above downward. The wound was packed with gauze, to prevent too rapid repair of the ribs, and a wide bandage was applied. On April 11, 1880, the patient was discharged cured, the cavity having healed, leaving a deeply depressed cicatrix. At present there is no lateral curvature, the ribs have entirely reformed, and make normal respiratory excursions, and there is proper expansion of the left lung.

DR. BRIDDON asked if Estlander did not make a longitudinal incision.

DR. GERSTER said that he did, but the important point was the principle of removing the ribs; it seemed better to make a single vertical incision rather than a number of horizontal ones.

DR. BRIDDON remarked that he had once removed five ribs by a single vertical incision, and had been criticised at the time for so doing, on the ground that there was more hemorrhage than there was when the incision was longitudinal.

DR. GERSTER thought that the amount of hemorrhage was not determined by the length of the incision alone. In his own case there was but slight bleeding, since the principal vessels could readily be seen and secured before they were divided. In reply to a question by D Sands, he said that the piece removed from the upper rib was not over one and a half inches in length, that from the lower rib about two and a half inches. The thickened pleura was not removed.

DR. SANDS asked Dr. Gerster if he had any idea as to the nature of the nerve-lesion in the case of fractures of the vertebra.

DR. GERSTER replied that, since sensation was not impaired, he was disposed to believe that the motor roots of the cervical nerves on the left side had been subjected to crushing or pressure by fragments, portions of the trunks supplying the left upper extremity, probably being destroyed in their continuity. The transient paralysis of the bladder, rectum, and the extremities of the right side seemed to have been dependent on pressure by bloody effusion. It was very doubtful that weight extension caused the disappearance of these paralyses; it was more probable that absorption of the effused blood was followed by improvement. However, the patient derived a great deal of comfort from the fixation afforded by the extension.

DR. J. D. BRYANT read a paper entitled

THREE CASES OF LIGATURE OF THE EXTERNAL CAROTID ARTERY, IN TWO OF WHICH BOTH VESSELS WERE TIED SUBCUTANEOUSLY.

(See page 542.)

DR. SANDS remarked that he had listened with interest to the paper just read, but that he could not agree with some of the conclusions arrived at by the author. It was doubtless well to reiterate the fact that, on the score of both safety and efficiency, ligature of the external carotid artery should often be performed in preference to that of the common trunk. But the principles advanced of resorting to ligature of the external carotid as a preliminary step to the excision of tumors have long been regarded as unsound. The formal ligature of the external carotid, although quite practicable, is not an easy operation, and ought not to be performed unnecessarily. Experience has proved that large tumors of the face, and especially those situated in the parotid region, can be successfully removed without adopting the precaution referred to. Moreover, it has been shown that the preliminary ligature of the principal trunk does not always have the desired effect of preventing hemorrhage, which is maintained by the anastomotic branches.

Dr. Sands also dissented from the proposal made by the author of the paper to tie the external carotid with the view of preventing or retarding the progress of a malignant growth. The anastomotic channels are so numerous and free that little or no benefit can be expected from such an operation, and he believed that the uselessness of this practice has been freely demonstrated.

DR. WEIR agreed with Dr. Sands in his last criticism. Practically he thought that it must very rarely happen that the surgeon was obliged to tie the external carotid before excising the jaw. He had never thought of doing this in cases of maxillary tumors, because it is possible to ligate vessels as they are exposed, or the facial artery may be compressed by means of a clamp introduced into the mouth. The gush of blood that follows the first incision seems very large at first, but the hemorrhage is soon checked.

DR. STIMSON testified to the fact that in one of the cases reported there was a rapid diminution in the size

of the growth, and also in the amount of the discharge, when the lingual was not tied, although the tumor was within the mouth. Hence the diminution of a growth does not seem to be dependent on the diminution of the blood-supply.

DR. BRYANT said that he was aware that ligation of the artery for the arrest of morbid growths is not always successful. There are many cases on record in which the hemorrhage attending excision of the jaw has been diminished by preliminary ligation of the external carotid. In his own case the disease rapidly recurred, and the use of the knife did not seem to be justifiable. After ligation of the arteries, whether less blood was supplied to it or not, the vascular morbid growth became anæmic, sloughing occurred on the right side, and the patient recovered the ability to swallow and articulate. One tumor was kept under observation for two months, during which time it did not increase in size. There is no reason, he added, why, if we can prevent blood from going to a part by tying the artery, we can not delay the growth of a tumor by diverting the blood from it.

DR. SANDS called attention to the fact that there is no true analogy between the operation of tying an artery for the cure of an aneurism, and the same procedure as practised for the arrest of a malignant growth. In the former case, the object aimed at is to prevent, or retard, the current of blood in the aneurismal sac, and thereby to accomplish by coagulation a complete and permanent cure. But the tying of an artery in the case of a growing tumor can at best be regarded as a palliative measure; and its value, in this respect, is certainly problematical. We should not confound cause with effect. The growth of a tumor is not determined to any extent by its supply of blood. On the contrary, the supply of the latter is generally equal to the demand, the vessels enlarging to keep pace with the rate of growth. When the anastomotic channels are free, ligature of the main vessel may have very little influence in diminishing the vascularity of the parts to which its branches are distributed. He once noticed, after tying the common carotid, that pulsation could be felt six hours later in the temporal artery on the side of the operation. He referred to a case cited by Erichsen in which both common carotids and one vertebral artery had been gradually obliterated from disease and operation combined; yet the nutrition of the brain was maintained by the remaining vertebral. Opinions expressed in regard to the retardation of a growth, caused by the ligation of an artery, are usually so vague as hardly to be within the limits of scientific inquiry. The utility of the practice was evidently not demonstrated in the case of Dr. Bryant's patients, one of whom died from hemorrhage after the operation, while the other continued to be unrelieved.

DR. STIMSON desired to place on record the fact that he had tied the external carotid, several years before, in order to arrest the growth of epithelioma of the mouth; the patient lived for several weeks after the operation, but there was no evidence that any benefit had resulted from it.

CASE OF PAROVARIAN CYST THAT DEVELOPED EXTRA-PERITONEALLY.

DR. GERSTER exhibited a specimen, and related the following facts concerning the case: The patient from whom it was removed was a young married woman, æt. twenty-one, who became pregnant about four months after marriage, and had an abortion. Examination at that time revealed a sessile tumor occupying the right iliac fossa. The patient was seen by a gynecologist, who advised waiting until a pedicle should form. The reader examined the lady in March, and found that the cyst in question was about the size of a child's head, and filled the right iliac fossa; it was immovable, and seemed to be generally adherent. On the 6th of April Dr. Gerster performed excision of the tumor. On dividing the tissues in the median line, down to the usual situation of the peritoneum, that membrane could not be found, but the cyst was exposed and tapped, a clear, yellowish fluid being withdrawn. The sac was then enucleated with the fingers, adhesions being successively ligated and divided, until the pedicle was reached, deep within the pelvis, near the right cornu of the normal uterus. The cyst was of the parovarian variety, and had grown outward between the layers of the broad ligament, until it reached the parietal peritoneum, which it had dissected up from the iliac fossa, following the course of an extraperitoneal abscess. A piece of peritoneum, about one-third of a square foot in area, was excised. Two drainage tubes were introduced, and the wound was closed with plate sutures.

On the day following the operation the patient, who had reacted well, suddenly developed tympanites, while her pulse became very rapid, and her respirations rose to forty; in fact, she appeared to be in a condition of shock similar to that observed after severe blows upon the abdomen. The tympanites was spontaneously relieved on the fourth day; her pulse improved under stimulation by enemata of brandy and hot water, and she subsequently made a good recovery, her temperature falling from 101.7° to normal. Bloody urine and some uterine flow were observed for a few days. The patient was out of bed on the thirteenth day.

The interesting feature in the case was the sudden development on the second day of symptoms of shock, although there certainly could not have been what is commonly called shock at such a late period; neither could peritonitis have appeared and disappeared so rapidly. There were no evidences of septic trouble, no vomiting or abdominal tenderness, but the main disturbance seemed to be in the circulation. The reader suggested, as a probable explanation, the occurrence of a localized coagulation—necrosis in the widely detached peritoneum, leading to hyperæmia of the contiguous serous covering of the intestines, which resulted in paralysis of the gut, with consequent tympanites. There may have been an attempt at the formation of adhesions; because, when the patient's bowels were moved on the fifth day, by a saline cathartic, she said that "something seemed to give way."

DR. SANDS asked if the symptoms might not have been due in part to the pressure of the bandage, which became tightened in consequence of the tympanites. The reporter said that the dressings were quite loose, and that, moreover, there was no change after they had been removed.

DR. GERSTER, in reply to an inquiry, said that all the sutures had held. Four of them were removed on the fifth day, together with the drainage tubes.

DR. WEIR thought that some of the sutures might have given way. He had noticed that silver wire sutures occasionally gave way soon after the operation, perhaps in consequence of change in the metal.

DR. BRIDDON could not believe that necrosis of the peritoneum had occurred, and been so quickly arrested.

DR. GERSTER explained that the existence of this condition seemed quite probable, in view of the fact that such a large piece of peritoneum had been detached. Dead tissue within the abdominal cavity might be absorbed, provided that it remained aseptic, as was frequently noticed after the removal of pieces of omentum. The nerves of the peritoneum, which were closely related to those of the solar plexus, might be so affected by these aseptic necrotic changes, that serious symptoms might be produced. In reply to a question by Dr. Briddon, he said that this nerve-irritation would have accounted for the symptoms presented in the case under discussion.

DR. STIMSON could hardly see how such a transient necrotic process could exist.

DR. BRIDDON thought that the fluid removed from the cyst presented an appearance different from that usually observed in parovarian cysts.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, April 27, 1887.

H. AUGUSTUS WILSON, M.D., IN THE CHAIR.

DR. H. M. FUSSELL read a paper on

DIAGNOSTIC VALUE OF TUBERCLE BACILLI IN SPUTA.

He said that his personal observations enable him to confirm the conclusions of numerous authorities, that the presence of tubercle bacilli in sputa is diagnostic proof of the presence of tuberculous phthisis. In the examination of his cases he used a modification of Gibbe's method suggested by Prof. William Osler. The sputum was spread as thinly as possible on a clean cover-glass, allowed to dry in the air, and passed quickly two or three times through the flame of a spirit lamp. The cover-glass was then immersed in solution of magenta, manufactured by Beck & Co., and allowed to remain fifteen minutes after first slightly heating. It was then decolorized in alcohol, acidified with hydrochloric acid (four or five drops to a watchglassful of alcohol), and examined under a moderately high power. In this manner the whole proceeding can be done in less than half an hour. If bacilli were not found by the rapid method, however, the glasses were allowed to remain in magenta over night, and then examined as before. The power used at first was Hartnack No. 9 immersion, afterward 7 objective, 4 eyepiece. Lower power may be used, however, by one perfectly familiar with the bacillus. He has used a Zentmeyer one-fifth with A eyepiece.

The sputa from 100 cases of lung disease were examined.

The sputa of 84 cases contained tubercle bacilli. In 79 of these there were evident physical signs of phthisis. In 5 there were few or no physical signs of phthisis. The diagnosis was made by the presence of bacilli in the sputa.

In 16 cases tubercle bacilli were *not* found in the sputa. In 8 of these phthisis was *not* suspected from the physical signs, and no bacilli were found; and in 8 the physical signs led to a suspicion of phthisis, but the absence of tubercle bacilli and the subsequent history proved it to be absent.

It is in these doubtful cases that the presence or absence of tubercle bacilli in the sputa is of such practical value.

DR. WILLIAM OSLER said that the importance of the tubercle bacillus in the sputum as a means of diagnosis is not sufficiently recognized by the profession. The technical skill required is not very great, and the time required with the rapid methods of staining is not more than fifteen to thirty minutes. He had succeeded in demonstrating the bacillus within five minutes of the time that the sputum was put upon the slide. This examination is particularly serviceable in just those cases where the evidences of disease are very slight. Only within the past few weeks there was in the University Hospital a man without any pulmonary signs, who had been failing in health and had slight fever. The condition was attributed to some obscure abdominal disease. Finally a suspicion arose that there might be some trouble with the lung, and the sputa were examined and the bacilli found. The signs of phthisis have since developed. The power required for these examinations need not be, as Dr. Fussell says, very high.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, May 5, 1887.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

DR. NEWTON M. SHAFFER read a paper prepared by himself and Dr. R. W. Lovett, of Boston, on

THE ULTIMATE RESULTS OF THE MECHANICAL TREATMENT OF HIP-JOINT DISEASE; AN ANALYSIS OF FIFTY-ONE CASES OCCURRING IN THE SERVICE OF THE NEW YORK ORTHOPÆDIC DISPENSARY AND HOSPITAL.

All the cases were taken exclusively from dispensary cases; all private patients and all hospital cases being left out of the account. All cases of excision were also eliminated. Having referred to the difficulties met with in sucessfully carrying out a course of treatment among dispensary patients in any chronic trouble, he said that these difficulties were especially marked in cases of such affections as hip-joint disease, where the treatment was a matter of years and involved the use of mechanical apparatus. In private practice the results obtained were, of course, much more favorable.

No case was considered which had not been treated exclusively in the service of the Orthopædic Dispensary.

No case was considered which had not been discharged cured; nor which had not been cured at least four years—that is, in which at least four years had elapsed since the patient had been discharged cured; nor which had not been under treatment for at least two years. *All* the cases which came under these exclusive conditions were reported.

The period studied in the investigation was the five years from 1877 to 1882, and during this time there were

treated at the institution altogether 778 cases of hip-joint disease. Of these 168 cases, or 21 per cent., were discharged cured, 261 discharged relieved, 49 discharged for neglect of orders, and 6 discharged as incurable; while 64, or 6.4 per cent., died. Of the deaths, 20 were due to tubercular meningitis, 5 to amyloid degeneration of the kidneys or other organs, and 3 to phthisis. It was the practice to discharge patients at first experimentally cured; watching the effect of leaving off the apparatus for a time. In some of them it was necessary to apply the splint again for a longer or shorter period before they could be discharged permanently cured.

The plan of treatment adopted in all cases was to apply the long Taylor splint, and instruct the parents or friends in its use. Unless the recumbent posture was required by the special circumstances of the case, the patient was allowed almost unlimited exercise in the open air, and once a week the patient was expected to report at the dispensary.

The aims of the treatment were as follows:

(1) To overcome by mechanical means any existing deformity.

(2) To protect the affected parts from traumatism.

(3) To secure free out-door exercise.

(4) To maintain that position of the limb in which there would be the least amount of deformity in case ankylosis should result.

No operations were performed with the exception of occasionally evacuating an abscess, and little medication was resorted to. Much credit, Dr. Shaffer thought, was due to the capable and energetic assistant surgeons of the institution for their faithful attention to the cases. The long splint used was made without any joint at the knee. He thought that the results would probably have been even better than they were if an intermediate apparatus had been employed, as was usually done in private cases; but on account of the additional expense involved, the institution was unable to provide this.

Of the 51 cases on which the paper was based, 4 were ascertained to have died. 2 of the deaths were due to tubercular meningitis, and the other 2 to acute pneumonia; the latter patients having been in good health up to the time of the attack which carried them off. Of the remaining 47, 6 had relapsed. 1 of these patients remained well two years, 2 three years, 2 four years, and 1 five years; and in 1 of these cases the relapse was due to a fall from a cart. In 1 of the cases excision of the hip had been performed, and the patient was still in bed at the end of a year. In the other 5 the traction treatment had been resumed, and of these 2 were cured a second time, 2 were now nearly well, and 1 was slowly improving.

Passing on to speak of the difference in the length of the two lower extremities, Dr. Shaffer said that the amount of shortening did not seem to depend on the presence or absence of abscesses; although there was a larger proportion of cases of shortening with abscess than of those without. The influence of age on the amount of shortening was quite marked; the greatest amount of shortening occurring in late cases, that is, when the patients were over ten years of age when the trouble commenced. It was a fact worthy of note that the difference in the length of the limbs almost always increased slightly after the case had been discharged cured.

As to the difference in the circumference of the two thighs, in the majority of instances it was between one and two inches; and when the result was the most perfect this was never less than one inch. No relation was observed between the amount of shortening and that of atrophy. The atrophy of the calf of the leg was more marked than that of the thigh in after years. A study of these cases seemed to show beyond a doubt that the muscular growth of the limb received a shock from the occurrence of hip-joint disease from which it never afterward fully recovered. The atrophy might doubtless have been diminished by massage and other appropriate treatment especially directed toward this end; but in dispensary practice this was impracticable, and, consequently, no special efforts of this nature were made.

In nineteen of the cases recovery took place with ankylosis, and three of the patients had perfectly free motion in every direction. The presence or absence of abscess seemed to have little influence on motion. An investigation of these cases showed that the amount of motion, as a rule, grows less instead of greater, as time goes on; and in no case did the motion increase after the discharge of the patient. A careful examination was made in regard to the presence of lateral curvature of the spine, and it was found that in only one out of fifty cases was there anything at all approaching true rotary lateral curvature. In this case, however, the latter condition was not really present. It was found that after cure the limb on the diseased side does not grow as rapidly as the unaffected one, and Dr. Shaffer thought this was no doubt the reason why the difference between the length of the two limbs so often became greater as time went on. In case of ankylosis, adduction, rather than flexion, was the thing to be most avoided.

In conclusion, he stated that these cases showed that, aside from the danger of the operation, conservative methods of treatment gave better results than excision. Excluding the four cases which died and the six which relapsed, there was not a single individual among the patients who was incapacitated for active occupations, and none were affected with tubercular disease or other serious trouble.

DR. LOVETT stated that, as a part of the work included in the present investigation, he had visited and examined these patients at their homes, and he had found that, taken altogether, they were an exceptionally healthy set of people. There were only five who were not in robust health. One of these was a boy, who was the only one of the number who used a crutch or cane; and the other three were young women who, while anæmic and inclined to be delicate, presented no signs of phthisis. There was very few who wore high soles on the affected side; although quite a number had tried this for a time, but eventually found that they could get along better without this device. As had been remarked, adduction was the most unfortunate deformity resulting from hip-joint disease. It made the gait ungainly, gave rise to pain in the back, and rendered the practical shortening of the limb a great deal in excess of the actual bone shortening. Nearly half of all the cases complained of more or less pain in the affected limb during damp weather; but in not a single instance was there the slightest reason to suspect any return of the disease.

DR. J. F. RIDLON said that by this paper the claim was substantiated that hip-joint cases could be successfully treated in dispensary practice. Having been for six years connected with the institution referred to, three of which were spent in the outdoor department, he was perfectly familiar with the whole matter. So far as he understood Dr. Shaffer's opinion, it was assumed that all the cases were of a tuberculous nature; but personally he believed that many cases which were supposed to be of strumous origin were in reality due to traumatism. He also thought that a considerable proportion were due to inherited syphilis. It, therefore, seemed only right that the causation of the trouble should modify the treatment adopted to a very considerable extent. In traumatic cases where there was more or less dead bone present, he thought it good surgery to cut down and remove it. If such cases were allowed to go on without operation they were very apt to end fatally; while in instances of this kind where even a very large fragment of dead bone was removed he had seen the patients make a perfect recovery. If a diagnosis of inherited syphilis was made, anti-syphilitic remedies should be employed in addition to the usual splint. He had, indeed, seen one or two syphilitic cases get well under anti-syphilitic treatment, without the use of mechanical means at all. He was convinced that many cases which were supposed to be of tuberculous character by orthopædic surgeons were in reality syphilitic, and he knew of one case of this kind which was treated with simply a hip-splint for two years, when a syphilitic eruption appeared. The mother and a younger child were also affected with a similar eruption. As to whether there was any way of deciding whether a case was tuberculous or syphilitic was a matter, he thought, worthy of careful investigation; and it seemed to him advisable to try the effect of internal remedies in addition to mechanical treatment. All were familiar with the difference met with between private and dispensary patients, and the more speedy cures among the former he believed to be largely due to this cause.

DR. SAMUEL KETCH said that he thought Dr. Ridlon was mistaken in the statement that it was assumed at the New York Orthopædic Dipensary that all cases, without exception, were of tubercular origin. It was also a fact that quite a number of cases, in addition to mechanical appliances, were treated with such remedies as iron, cod-liver oil, and hypophosphites. His personal experience with the mechanical apparatus employed, led him to consider that with it we had a most satisfactory method of treating hip-joint disease. Not only were good limbs secured, but also relief from suffering; and many of the cases were saved from the knife.

DR. LOUIS A. SAYRE said that the conclusions of Dr. Shaffer corresponded to a great extent with the views which he had taught for the last thirty years. If proper mechanical treatment were carried out the patient usually recovered. Whether a predisposition to tuberculous, syphilitic, or other dyscrasia were present or not, he had observed that in almost all cases an exciting cause, however trifling, had been required to develop the trouble in the hip-joint; this traumatic influence serving to fix the diseased process at this particular point. If any hereditary taint were present, of course, a very slight injury was required for the development of the disease. With proper mechanical treatment and the use, in appropriate cases, of such measures as blisters, leeches, and the hot iron, a fair result could usually be obtained, and there were scores of his patients in this city and elsewhere, who now had perfect motion of the limb. Many of these he had seen in consultation with such surgeons as Mott, Willard Parker, Van Buren, and Hamilton, and the results were so successful that it would never be suspected that they had ever had hip-joint disease at all.

If we could succeed in arresting the disease, Dr. Sayre went on to say, mechanical treatment was all that would be required. The moment that the apparatus was applied there was instant relief from pain. But, in spite of suitable mechanical means and the internal use of cod-liver oil, bichloride of mercury, or other remedies that seemed to be indicated, there were a certain number of cases which, instead of improving as time went on, only kept growing worse. If, therefore, caries went on increasing, with long-continued suppuration which was liable to result in amyloid degeneration of the kidneys and other organs, then the knife was the proper thing to resort to. Instead of letting a case go on for eight years, as had been done in some of those reported in the paper, with the health becoming all the time more and more broken down, he thought exsection was infinitely preferable. So far as results were concerned, these would be incomparably better than in serious cases of this kind in which it was not resorted to. In this connection Dr. Sayre referred to two patients in whom he had performed exsection, one of whom had afterward become a champion foot-ball player and college athlete, while the other had won a pair of silver skates for his agility in skating. Yet these were cases in which he believed death would have resulted if he had not performed the operation.

For a number of years he said he had only been allowed to do exsections in those who were already condemned to die, so strong was professional opinion against the procedure; and, consequently, his statistics were not as favorable as they would have been if he could have selected his cases. A certain number of cases had been referred to this evening as incurable, but he thought it was a great mistake not to give them the chance which exsection offered. Of the seventy cases in which he had performed the operation, many were of this apparently hopeless character. As regards the condition of the spine in the subjects of hip-joint disease, while there might not be present true rotary lateral curvature, it was undoubtedly true that there was more or less lateral distortion in many of the cases.

DR. V. P. GIBNEY considered the statistics presented in the paper a valuable addition to surgical literature, and particularly as regards the questions of ultimate motion and ultimate atrophy. It would seem from them that the common impression was an erroneous one, that motion increases, and atrophy becomes less and less marked as time goes on. These were very important points, and they would serve to help us in our prognoses. Personally, he had gained increasing confidence in the value of mechanical treatment. With it there were no exacerbations, there was immunity from suffering, and the children grew hearty and robust.

DR. A. B. JUDSON said that the limb would take the position which was the most convenient to the patient. Adduction was particularly undesirable, and he thought

that patients should be drilled so as to spend as much time as possible with their weight on the affected limb.

DR. L. H. SAYRE said that as long as the patient showed improvement, however slow, mechanical treatment should be persevered in; but, if instead of improving, he steadily lost ground, he believed it was good surgery to remove the dead bone at once. He did not believe, however, in early exsections, and did not think the results thus obtained would at all compare with those of mechanical treatment.

DR. SHAFFER, in closing the discussion, stated that he did not wish to be at all dogmatic in his views in regard to tuberculosis and syphilis. The only way that he could distinguish between the two was by the test of treatment; some cases getting well under antisyphilitic remedies, and some not. In the early stages he did not think that we could make the distinction. It was important to remember that the paper was devoted exclusively to the results of mechanical treatment among dispensary patients, and he thought that these had unquestionably demonstrated the fact that one adequately equipped dispensary could do the work of three or four hospitals among this class of cases, and at a far smaller expense. In regard to medicines, the Orthopædic Dispensary, on account of the large expenditures which it had to make for mechanical appliances, was not able to furnish these. In private practice, however, he was in the habit of using internal remedies wherever they seemed to be indicated.

He did not wish to bring up the question of mechanical treatment *versus* excision. The cases which were spoken of as incurable, were those which were incurable as regards deformity, and not the disease itself. Patients with chronic suppuration and sinuses were not given up at all, but followed up until they died; and in his private practice some of his best results had been in cases of this kind. If he could have the entire control of the child, and the parents would give it the benefit of fresh country air and other needed hygienic conditions, a good result could almost invariably be obtained, provided amyloid degeneration did not occur. In his experience there were fewer deaths and better general results from mechanical treatment, with this special oversight on the part of the surgeon, than from excision. In the patients which had been referred to in the paper as living eight years under treatment, the eight years were not spent in combating sinuses, but in getting the best ultimate position and most serviceable limb. These were mostly cases of dry caries. He was not opposed to excision, but he believed that it should be resorted to only very rarely. In cases of which he had the entire control it was seldom or never necessary.

CORRESPONDENCE.

SULPHURETTED HYDROGEN INHALATIONS.

To the Editor of THE MEDICAL NEWS,

SIR: My attention having been attracted by an article, entitled, "Sulphuretted Hydrogen Inhalations," in your issue of May 7, 1887, in which are described the methods employed at Allevard, France, I respectfully desire to call your attention to the fact that these identical methods have been in operation in Sharon Springs, N. Y., since June, 1884, and are described in Dr. Beverly Robinson's *Nasal Catarrh and Allied Diseases* (second edition, page 141).

During the past three years I have had occasion to use them in my own practice, in many cases of diseases of the respiratory organs, and with gratifying success. As the use of sulphuretted hydrogen is now receiving marked attention from the profession, it seems to me eminently proper that medical journals, while directing special notice to results obtained in foreign lands, should not ignore the employment of the same means in our country, and within easy access of those of their readers who may not be able conveniently to cross the sea.

Respectfully yours,

G. A. WILLIAMS, M.D.,
Resident Physician.

SHARON SPRINGS, N. Y.

NEWS ITEMS.

DIRECT INOCULATION OF TUBERCULOSIS IN ALASKA.—DR. PITCHER relates the following personal observation among the natives of Alaska:

The native population is, and has been for some time, steadily decreasing. It is true that an epidemic of smallpox some years since contributed largely to that end, but not to such an extent that the ravages of consumption were lost sight of. The sudden onset of the more alarming symptoms in the respiratory and circulatory organs may be in a measure explained by the almost universal prevalence entailed in "packing" immense loads upon the back by means of a band passed across the chest horizontally, and attached to bands at either extremity, passing from the load, under the arms, in front of and over the shoulders, back to the load again. This, as a matter of course, renders breathing a difficult feat. The dampness of the climate, lack of good hygienic surroundings, intermarriage with Russians, existence of syphilis and scrofula, may explain the existence of the disease, but not its rapid spread and presence throughout whole families. One would expect to find among a people accustomed to a climate from infancy, taking plenty of out-door exercise, living extensively upon a diet of fats and oils, and remarkably free from gastric disturbances of any type, a certain percentage free from it, but such is not the case; it is the exception, rather than the rule, to find a man, woman, or child free from it. After examining a large number of cases, young and old, it struck me that some unusual agency must be at work, but look where I would, no remarkable explanation could be found, until I chanced to be in a house visiting a patient during the preparation of the evening meal. The klutchman (wife) was assiduously chewing a mass of something, spitting it, when thoroughly moistened, into a spider. Watching more closely, the substance chewed proved to be a sea-weed, prepared in the fall by pressing into square cakes and drying. This she picked to pieces and thrust into her mouth, masticating it as described. The spider at last becoming full a quantity of seal or herring oil was poured over it, a few hot coals stirred in and later warmed slightly over a fire. Of this delicate dish the entire family partook briskly. This klutchman was a consumptive, and the patient (her son) was also suffering from the same complaint.—*Medical Age*, April 25, 1887.

NEW HYGIENIC MUSEUM IN BERLIN.—A large hygienic museum has recently been opened in Berlin. The rooms on the first floor, of which there are sixteen, contain exhibits relating to fire, building, heating, ventilation, lighting, water-supply, and road and street making. On the second floor are eighteen rooms, in which are shown objects used in civil and military nursing, clothing, baths, education, asylums, prisons, etc.—*Sanitarian*, April, 1887.

NUMBER OF AMERICAN MEDICAL STUDENTS IN VIENNA.—For the year 1886–87 there were ninety-five Americans studying medicine in Vienna.

PRIZES IN THE FRENCH ACADEMY OF MEDICINE.—The Academy offers $2000 (10,000 francs) for the best essay on treatment of urethral stricture, or other diseases of the genito-urinary tract. Meynot has contributed $14,000 for essays in otology and ophthalmology.

A NEW TECHNICALITY.—In view of the great confusion arising from the indiscriminate use of various words and phrases to denote the same operation, Dr. Reeves proposes the single word "*ventrotomy*" to express the operation of opening the abdominal cavity, for whatever purpose. Operations with incisions in various parts of the abdominal walls are designated median, anterior, lateral, and posterior or lumbar ventrotomy. In accurately describing a gastrotomy done through the linea alba, he would say "median gastro-ventrotomy."

A LETTER FROM PASTEUR.—*Science* for April 22, 1887, publishes the following extract from a letter by Pasteur:

Pasteur, who is now sixty-four years old, was, last winter, sent by his physician to Italy for his health, and is only just returning to Paris. Under date of April 1st, in a letter to his friend, Mr. Jules Marcou, of Cambridge, which the latter kindly permits us to use, he writes from Arbois in the Jura, that he hopes to live to welcome the earliest publications of the Institut Pasteur, and adds, "We have just purchased eleven thousand square metres of land, and the subscription has reached the sum of nearly two million francs; it is, however, very insufficient, for, if we spend twelve hundred thousand on land and buildings, the income from the remainder will be much too small. Oh! if only some American millionaire were inspired with an enthusiasm for this work! I hope that when we are incorporated, and this will be soon, we shall be better endowed. We shall then be able to receive legacies. To proceed suitably and with full independence, we should have, according to my estimates, three and a half million francs. I am confident. The future is ours. The prophylactic treatment of rabies continues to do well. Very, very rarely are there failures, and all in cases where exceptional circumstances appear. There has been but one failure since the first of January, and more than five or six hundred cases treated, a multitude having been most severely bitten. If we could only attack diphtheria, phthisis, etc., with success. We are going to attempt it. It is at least a step toward discovery to have confidence, and to hope in the result of obstinate labor."

OBITUARY RECORD.—Died at New York, on Monday afternoon, May 9th, E. DARWIN HUDSON, M.D., aged 43 years.

Dr. Hudson was an earnest worker in the field of medical science, and a frequent contributor to medical literature. He held the professorship of Medicine and Diseases of the Chest in the New York Polyclinic; he was Visiting Physician to Bellevue Hospital; and was one of the original members of the Association of American Physicians.

—— at Philadelphia, on the 9th instant, of typhoid fever, ELLIOTT RICHARDSON, M.D., Lecturer on Clinical and Operative Obstetrics, and Demonstrator of Operative Obstetrics, in the University of Pennsylvania.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 7, 1887.

SHAFER, JOSEPH, *Assistant Surgeon.*—Detached from the "Minnesota" and to the "Ossipee."

SIMON, W. J., *Surgeon.*—Ordered to the U. S. Steamer "Boston."

HENRY, C. P., *Assistant Surgeon.*—Detached from Hospital Philadelphia, and to the "Boston."

MEANS, VICTOR C. B., *Assistant Surgeon.*—Detached from Hospital Mare Island, and to the Hospital New York.

SIMONS, MANLY H., *Passed Assistant Surgeon.*—Detached from Naval Academy and to the "Constellation."

DIEHL, OLIVER, *Passed Assistant Surgeon.*—Detached from Hospital New York, and to the Hospital at Philadelphia.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 3 TO MAY 9, 1887.

FRYER, BLENCOWE E. *Surgeon.*—Ordered for examination by Army Retiring Board at San Francisco, Cal.—*S. O. 101, A. G. O.*, May 2, 1887.

STERNBERG, GEORGE M., *Surgeon.*—Assigned by the President to the special duty under the Treasury Department of "investigating the merits of the method practiced in Mexico and Brazil for preventing yellow fever by inoculation." Relieved from duty as attending surgeon and examiner of recruits in Baltimore, Md.—*S. O. 101, A. G. O.*, May 2, 1887.

MIDDLETON, J. V. D., *Major and Surgeon;* HAPPENSETT, J. C. G., *Major and Surgeon;* AINSWORTH, F. C., *Captain and Assistant Surgeon.*—Appointed to assemble at U. S. Military Academy, West Point, N. Y., on June 1, to examine into the physical qualifications of the members of the graduating class and of the candidates for admission to the Academy.—*S. O. 102, A. G. O.*, May 3, 1887.

LONSIG, LEONARD Y., *Captain and Assistant Surgeon.*—Sick leave of absence still further extended six months, on Surgeon's certificate of disability.—*S. O. 103, A. G. O.*, May 4, 1887.

BIART, VICTOR, *Captain and Assistant Surgeon.*—Sick leave still further extended one year, on Surgeon's certificate of disability.—*S. O. 99, A. G. O.*, April 29, 1887.

EWING, CHAS. B., *First Lieutenant and Assistant Surgeon.*—Ordered from Fort Leavenworth, Kansas, to Fort Lewis, Colorado, for temporary duty.—*S. O. 100, A. G. O.*, April 30, 1887.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

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